BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 3 1948

THE PUBLIC HEALTH LABORATORY SERVICE*

BY

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"Immer höher muss ich steigen,
Immer weiter muss ich schaun."—GOETHE.

In the codicil to his will, prepared in 1877, Dr. Milroy speaks of the importance of determining the part played by contagion in the development and spread of various diseases. "This can only be effected by the patient investigation of numerous *verified* and *authenticated* facts in various localities and regions, and under different circumstances and conditions, apart from all previous speculation and any mere traditional or customary beliefs." Though we have progressed a long way in our knowledge of infection since that time, these words might well be taken as its text by the Public Health Laboratory Service, whose aim it is, by a combination of careful and accurate observations in the laboratory and in the field, to interpret the various manifestations of contagious disease in the community and to discover the causative agents of those diseases that have so far remained obscure.

During the past ten years or so, mainly stimulated by the demands of war, the pathological services of this country have expanded greatly. New laboratories have been established, existing laboratories have been enlarged, and the number of persons engaged in pathological work has increased beyond expectation. Some of this development was the result of deliberate planning to counter emergencies; some of it was of an *ad hoc* and almost fortuitous nature, designed to meet the pressing demands of the moment. The bodies taking part comprised the Ministry of Health, the Medical Research Council, universities, local authorities, and private pathologists, each working towards a separate end and each acting to some extent independently of the other. What, may we ask, has the result been? Have we now got the pathological services that we need to fulfil the extensive obligations imposed by the National Health Service Act? Are our laboratories staffed by properly trained and experienced pathologists? Are the laboratories under Government control working in harmony with those owned by the universities? And is the great body of pathologists actuated by a desire not only to provide efficient help for the clinician and the medical officer of health but to carry research into the various fields where our knowledge is still deficient? These are some of the questions that need answering, and I feel the time has come to review our present position. It is difficult to appraise the situation as it now is without understanding how it has come about, and I propose therefore to devote the major part of the time allotted to me to a historical retrospect of the gradual intrusion of the laboratory into the practice of preventive medicine.

[The lecturer then dwelt at some length on the studies of John Snow on cholera, William Budd on typhoid fever, and Villemin on tuberculosis, in order to illustrate how, by their pathological insight and epidemiological acumen, these pioneers of the pre-bacteriological era were able to prove as fully as was then possible not only that the diseases they investigated were contagious but that the contagion must consist of minute particles indefinitely reproducible in the body of the host.]

Development of Public Health Bacteriology

The rise of public health laboratory work must be traced to the stimulating influence of Sir John Simon (1890) and of his successors at the Local Government Board—George Buchanan, Thorne Thorne, and William Power. Simon held it necessary that special investigations should be promptly made in all parts of England wherever and whenever the local prevalence of disease afforded ground for apprehending the existence of epidemics or the prevalence of local, occupational, or other insanitary conditions. He also maintained that special laboratory researches should be undertaken by the department for the elucidation of obscure aetiological questions, and for bringing the data so obtained to bear on sanitary administration. Under his aegis a series of careful, minute, painstaking, and accurate field inquiries was made by officers of the Board into such diseases as enteric fever, scarlet fever, smallpox, and food-poisoning, supported by an increasing volume of laboratory work designed to control the quality of water, milk, shellfish, foods, and air. The administrative side of the organization that was built up and galvanized by Simon has recently been described by Sir Arthur MacNalty (1947, 1948a, 1948b) in his FitzPatrick Lectures to the College. I shall therefore content myself with giving a brief résumé of the gradual development of laboratory examinations in relation to public health and sanitary science.

Water

From the middle of last century onwards the chemical analysis of water came to be practised more widely, but from the hygienic point of view the results were disappointing. Several careful investigations into water-borne outbreaks of enteric fever combined to show that water which satisfied the strictest tests for chemical purity might nevertheless be capable of giving rise to serious disease. Cory

*The first of two Milroy Lectures (abridged) delivered to the Royal College of Physicians of London on Feb. 10 and 12.

(1881–2) relates how he tested the truth of this conclusion by adding known amounts of typhoid excreta to water and sending it for chemical analysis to Dr. A. Dupré of the Westminster Hospital. It was found that the addition of 3.5 gr. (0.23 g.) of a typhoid stool to a gallon (4.5 litres) of water caused a rise of only 0.02 part per million in the albuminoid ammonia. According to the standards then in vogue such a sample fell into Class I, comprising waters of extraordinary organic purity to which no objection could be taken. The position at the time was ably epitomized by Buchanan (1881–2) in the words: "The chemist can, in brief, tell us of impurity and hazard, but not of purity and safety."

From about 1882 onwards attempts were made by exponents of the rapidly developing science of bacteriology to improve on the methods of the chemists. Robert Koch in Germany, Percy Frankland at Dundee and later at Birmingham, and Emanuel Klein at the Brown Institute and St. Bartholomew's Hospital, among others, used the plate method for the quantitative estimation of bacteria in water. Gelatin was employed, and attention was paid to the total number of colonies developing and the proportion liquefying the medium. Little immediate progress, however, was made, but it began to be recognized that the potential harmfulness of polluted water was due to the micro-organisms it contained, and that the results of chemical analysis had their highest value in the light they threw on the quality of the water from the standpoint of bacterial contamination (Brown, 1890).

It soon became apparent that the attempt to gauge the degree of impurity of a water by the isolation from it of pathogenic organisms like the typhoid bacillus was technically too difficult and what we might call strategically unsound. Instead a search was made for the common intestinal organisms, which would act as indicators of excretal contamination Again little progress resulted. It was left to Alexander Houston to show that it was not enough to demonstrate the presence of intestinal organisms in a water, it was necessary in addition to measure their numbers and so gain some idea of the degree of pollution of which they afforded an index.

Working with Klein (Klein and Houston, 1897–8), Houston found that crude sewage usually contained about 100,000 coliform bacilli per millilitre and about 10 to 1,000 spores of *Bacillus enteritidis sporogenes*. Together, Klein and Houston (1898–9) performed a very illuminating experiment. They obtained sewage from eight different sources, diluted it progressively with sterile water, and carried out chemical and bacteriological analyses on the mixtures. The results revealed that the bacteriological method was 10 to 100 times more delicate than the chemical, and led the authors to conclude that "chemistry, as usually applied, is powerless to detect a degree of pollution of water with sewage which, from the viewpoint of the bacteriologist, would be considered gross in amount."

This conclusion was soon substantiated in practice. For some years there had been a series of dropping cases of enteric fever at Chichester. The town was supplied from several wells. The water from all of them was apparently pure as judged by chemical methods, but when Houston (1901–2) examined them bacteriologically he found that most of them were contaminated with organisms of excretal origin.

During the succeeding years Houston expended his whole energy on developing and improving bacteriological methods for the examination of water. He studied different index organisms; he elaborated methods for their recognition and differentiation; he followed the rate at which they died out in sewage under natural and artificial conditions; and he defined the particular type of information that each of them could give. From his appointment in 1905 to the newly created post of Director of Water Examinations to the Metropolitan Water Board till his death in 1933 he occupied a position of authority that none could challenge. It is as true now as it was fifty years ago, when he made his first great contribution, that bacteriology alone of the laboratory sciences is able to provide that assurance of safety which is demanded of the water supplies of our great cities. Subsequent work, though it has refined the means for distinguishing between different members of the coliform group, has done nothing to impair the essential soundness of Houston's conclusions, and his methods are in daily use throughout the public health laboratories of this country.

It may be noted that systematic bacteriological examination of the water supply was begun by the Metropolitan Water Board in 1885, by Professor Rubert Boyce at Liverpool in 1898, by Manchester and Birmingham Universities and by the West Riding Laboratory about 1900, and by the University of Leeds about 1904.

Shell-fish

By 1895 it had become clear that shell-fish might serve as a vehicle for infection with typhoid fever. At the request of Dr. Thorne Thorne, who was then Chief Medical Officer of the Local Government Board, Dr. Bulstrode (1894–5) surveyed the conditions under which oysters and certain other edible molluscs were cultivated and stored along the coast of England and Wales, and in a later report (Bulstrode, 1909–10) he summarized the evidence incriminating shell-fish as carriers of enteric fever.

Though Klein (1894–5) was unable at first to distinguish between polluted and non-polluted oysters, he was helped by the work of Houston, and subsequently (Klein, 1899–1900) succeeded in demonstrating excretal pollution of cockles bought from a street hawker. He showed (Klein, 1900–1) that cockles and mussels readily took up pathogenic organisms like the typhoid bacillus and the cholera vibrio from sea-water and remained infected sometimes for days. It followed from this, and from the observations of later workers, that to ensure safety shell-fish ought to be laid down in non-polluted water for a few days before being marketed, so as to undergo a process of natural self-purification. For this purpose artificial tanks containing chlorinated water have come to be used for oysters and mussels (see Dodgson, 1936), and the purity of the shell-fish is gauged by the coliform count or, still better, by the faecal coli count using the 44° C. MacConkey broth-fermentation test (Dodgson, 1938).

Sewage

Some of the early bacteriologists studied the flora predominating in different stages of decomposition and prepared the way for the so-called biological method of the purification of sewage. The story is told in Sims Woodhead's fourth Harben Lecture of 1897 and is continued in the reports of the Royal Commission on Sewage Disposal appointed in 1898.

Of late years the public health bacteriologist has been interested in the demonstration of pathogenic micro-organisms in sewage. Since the introduction in 1927 of Wilson and Blair's medium, and the subsequent development of further valuable liquid enrichment and solid selective media, it has become practicable to isolate pathogenic intestinal bacteria from highly contaminated materials like sewage. As a result typhoid and paratyphoid

bacilli have often been demonstrated in town sewage even in the absence of any known cases of enteric fever. This discovery is becoming of considerable epidemiological interest. It seems probable that the organisms are derived from subclinical cases or from carriers, and the problem now is to determine their precise origin. Already a start has been made, at Cardiff, by King (1944), who was able by examining sewage effluents from a factory to detect the presence of paratyphoid bacilli of a particular phage type, and then by examining the faeces of the individual employees to discover a symptomless carrier infected with the same type. The exploitation of this method for revealing unsuspected foci of enteric infection will be watched with considerable interest.

Milk

According to Newsholme (1936) Dr. Michael Taylor, of Penrith, first drew attention in 1858 to contaminated milk as a cause of fever, and in 1870 published the first recorded account of an outbreak of scarlet fever due to milk. In Norway, Homan and Harting, who practised in the town of Kragerö, described in 1859 an outbreak of dysentery spread by milk, and brought strong epidemiological evidence to show that the infecting agent was a living organism which had gained access to the milk by excretal contamination (Kobro, 1923).

The annual reports of the Local Government Board during the latter half of the nineteenth century contain records of numerous milk-borne outbreaks of scarlet fever, diphtheria, enteric fever, and diarrhoea, of which some of the most interesting refer to scarlet fever. In 1882 Power (1882-3) investigated the occurrence of multiple cases of this disease occurring simultaneously in several districts of central London, and ascribed the infection to milk coming from a particular farm in Surrey. He postulated that one of the cows in the herd must have been infected with the scarlet fever organism. He reached the same conclusion again three years later (Power, 1885–6a), when he traced another outbreak affecting several of the North London boroughs to milk from a farm at Hendon. Just before the outbreak three newly calved cows suffering from udder disease had been admitted to the herd from Derbyshire, and it is highly probable that one at least of these animals was suffering from streptococcal mastitis. Unfortunately another disease causing fever, constitutional disturbance, and a localized vesicular eruption spread through the herd soon after the arrival of these animals, and both Power and Klein concluded that this generalized disease—known as the Hendon cow disease—was due to the same streptococcal organism as was responsible for the scarlet fever cases in man.

Though Power and Klein have been severely criticized for confusing these two diseases, it is only fair to point out that they deserve a great deal more credit than they received. Power was almost certainly right in attributing milk-borne scarlet fever to the diseased udder of a cow, though it was not till fifty years later that he was vindicated by the observations of Bendixen and Minett (1938) on the occurrence of bovine mastitis caused by infection with the human type of haemolytic streptococcus—*Streptococcus pyogenes*. Klein (1886–7) was also right in concluding that scarlet fever was due to a streptococcus, which he called *Micrococcus scarlatinae*. He isolated this organism from the finger blood of four cases of scarlet fever during life and from the heart blood of one case after death. Klein's conclusions were confirmed shortly afterwards by Gordon (1898–9 ; 1900–1) ; but it was not till the extensive work of Dochez, Avery, Lancefield, and the Dicks in the United States and of Fred Griffith in this country during the second and third decades of the present century that the aetiological role of streptococci in scarlet fever was finally established.

[The lecturer then described the gradual incrimination of milk as a carrier of tuberculosis, undulant fever, and epidemic respiratory and intestinal disease, and deplored the effect of Koch's pronouncement in 1901 at the London Congress on Tuberculosis that the bovine type of tubercle bacillus was relatively harmless to man. This led to discontinuance of the current practice of boiling milk, and put back the clock of pasteurization for many years. He ended with the following words.]

It is a sombre thought that our people are still suffering from the effects of an ill-considered authoritative pronouncement made nearly fifty years ago by a German bacteriologist to whom we, and the whole world, owe so much for the other services he rendered to medical science. We may perhaps recall the words of the book of Job: "Great men are not *always* wise: neither do the aged understand judgment."

On the laboratory side bacteriological methods of testing milk were not introduced till after Bang's discovery of tubercle bacilli in milk in 1884. Delépine at Manchester started examining milk for these organisms in 1892, and Sims Woodhead, Kanthack, and Klein were early in the field. Between 1896 and 1908 Delépine (1908–9) examined no fewer than 7,000 samples of milk for the Manchester Corporation ; he found that of 5,320 samples of milk as delivered to the consumer 8.9% contained living tubercle bacilli.

In 1901 Park in New York drew attention to the "great bacterial contamination of the milk of cities," and Pakes (1900) reported that London milk contained over 3 million bacteria per millilitre. Savage, Delépine, and Thomas Orr, among others, laboured to devise some way of measuring the degree of bacterial pollution, but without much success. The value of the plate count was recognized as being limited, and no such clear answer was obtainable from the coliform test in milk as Houston had derived from its use in water examination. It was not till the concept of purity in milk was differentiated into its two components of cleanliness and safety that the failure of laboratory methods to protect the consumer became evident. It is now realized that by routine methods the bacteriologist cannot say, as he can with water, whether a given sample of milk is safe to drink. All he can do is to say whether the milk is of a reasonable standard of bacterial cleanliness and whether its keeping quality is likely to be satisfactory to the housewife. For this purpose much simpler methods, based on the reduction of certain aniline dyes and designed to estimate the total metabolic activity of bacteria in the milk, are sufficient.

Heat-treated milk forms an exception. The introduction of the phosphatase test by Kay and Graham in 1935 provided a means of assessing the degree of heat treatment a milk had received, improved the control of pasteurizing plants, and went a long way to ensure that only milk which has been adequately heat-treated and freed from the risk of causing human disease shall be offered to the public under the designation "pasteurized."

Food

Knowledge of the animal parasites that are conveyed by food was well advanced before bacterial food-poisoning had even been recognized. Thudichum in 1864 gave a detailed description of the helminths of animals, of the diseases they cause, and of the illnesses that may result in man if he becomes infected with them. Power (1879–80) recorded what was probably the first account of trichiniasis in England, occurring on board the reformatory school ship *Cornwall*. The diagnosis was made retrospectively by

microscopical examination of the muscles of one of the victims exhumed two months after death.

[The lecturer then recounted the steps that had led to the displacement of Brieger's ptomaine theory of food-poisoning by the belief that it was a specific infection with organisms of the *Salmonella* group; and told of the later definition by Dack and his colleagues (1930) of the staphylococcal toxin type of food-poisoning. He went on as follows.]

The great increase in food-poisoning during the second world war led to renewed interest in the aetiology of this disease; and, though much of the increase was traced to the presence of salmonellae in imported spray-dried egg, and to staphylococcal intoxication attributable to the low hygienic standards of communal feeding centres, the causation of many outbreaks remained obscure. Suspicion is now being cast on other organisms, and a great deal of research will be necessary before the full story is unfolded.

The diagnosis of food-poisoning can usually be made on clinical grounds alone, but laboratory investigation is necessary to define the particular bacterial agent concerned. Indeed, it is mainly as the result of systematic examinations of material from food-poisoning outbreaks that our present knowledge of some of the factors causing this disease has been gained. The value of field investigations has been greatly increased of recent years by the development of methods for the serological typing of salmonellae and the bacteriophage typing of staphylococci which can often throw light on the probable article of food responsible and the way in which it became contaminated.

Air

The observations of the mid-Victorian epidemiologists on the effect of overcrowding in favouring the spread of such diseases as typhus, cholera, and tuberculosis prepared the way for bacteriological investigations of the air as soon as it became evident from the work of Pasteur, Lister, Koch, Loeffler, and others that infectious diseases were almost certainly due to the action of living micro-organisms.

Systematic research on the bacterial content of the air was begun in Germany by Hesse, who published his records in 1884. Two years later Percy Frankland (1886), in this country, making use of Hesse's gelatin-coated tubes for the detection of organisms suspended in the atmosphere, and of gelatin plates for the detection of organisms attached to heavier particles undergoing sedimentation, found that bacterial contamination of the air was higher in the town than in the country, higher at street level than at the top of St. Paul's or of Norwich Cathedral, higher indoors if people were moving about than if they were still, and very high indeed in a crowded railway compartment.

Considerable work was carried out during the 'nineties, and at the beginning of the present century Gordon (1902–3) and Graham-Smith (1903) both made quantitative studies on the air of the House of Commons. Influenced by Houston's work on the value of coliform bacilli as indicative of excretal pollution of water, Gordon selected salivary streptococci as his index organisms, and by this means was able to show that during loud speaking in a closed room air-borne organisms derived from the mouth could be detected 40 ft. (12.3 m.) in front and 12 ft. (3.7 m.) behind the orator. Indeed, he found by examination of the air in the chamber that different speakers on the Treasury bench emitted their own characteristic salivary flora. The Chancellor of the Exchequer harboured a *longissimus* strain, the Prime Minister a *brevis*, and the President of the Board of Trade a haemolytic streptococcus (Gordon, personal communication).

The gradually increasing recognition of the importance of the carrier in the spread of infectious disease led to a diminution of interest in the part played by air, and it was not till the study of Wells (1934) in the United States on the characters of air-borne droplets, and the observations in this country on cross-infection by Allison and Brown (1937) in fever hospitals, and by Leonard Colebrook and others in surgical wards, that it was revived. The old controversy between the supporters of Cornet and Flügge on the relative importance of dust and droplets was taken up again, and even the long-discredited work of Power (1880–1; 1884–5; 1885–6b) on the aerial dissemination of infection around smallpox hospitals began to be reconsidered.

To-day air-borne infection stands in the forefront of epidemiological and laboratory studies in public health work, and numerous teams are investigating the different modes of aerial spread and the measures that can be taken to control them.

Disinfection

The study of disinfection played a large part in the early laboratory work on public health. Even before the bacteriological era, Budd in 1856 had advocated the use of chemical agents for the destruction of the infecting agent in typhoid stools. Parkes in 1873 defined a disinfectant as a substance that destroys the specific poison of an infectious disease. Lister's paper in 1867 on the successful treatment of compound fractures by the use of phenol opened up a wide field of investigation, and careful observations were made by Baxter (1875), among others, to determine the range of usefulness of the common disinfectants such as chlorine, potassium permanganate, sulphur dioxide, and phenol. He came to the conclusion that dry heat was probably the most effective of all bactericidal agencies, and emphasized the difficulties of aerial disinfection.

Robert Koch in his classical paper of 1881 with Gaffky and Loeffler drew attention to the particular virtue of saturated steam under pressure, and introduced the first quantitative method for estimating the comparative value of chemical disinfectants. Intensive quantitative work was carried out during the following thirty years by Geppert in Germany, Arrhenius and Madsen in Denmark, and by Chick and Martin, and Rideal and Walker, in this country. No satisfactory method of standardizing chemical disinfectants has yet been devised, and inquiry still proceeds.

The last ten years have witnessed the introduction into medicine of the sulphonamides and of the antibiotics like penicillin and streptomycin, and the attention of bacteriologists is now focused largely on the action of these drugs in the tissues. The older use of disinfectants for the destruction of micro-organisms outside the body is, however, not altogether forgotten; and renewed interest is being taken in the disinfection of the air by ultra-violet light and by various sprays distributed in the form of aerosols or vapours.

Laboratory Investigation of the Infectious Diseases

Time does not permit me to review, even briefly, the epidemiological studies undertaken on the major infectious diseases during the past century, and I must confine myself to a short account of the laboratory investigations made in respect of their prevention and control. Even here I must restrict myself to one or two examples, beginning with diphtheria.

Diphtheria

After the successful isolation in pure culture of the diphtheria bacillus by Loeffler in 1884 there followed an interval of about ten years before the examination of throat swabs for this organism was introduced into routine practice in Great Britain. In 1894 Sims Woodhead, who was director of the laboratories on the Victoria Embankment

belonging to the Conjoint Board of the Royal Colleges, organized a service for the systematic examination of material from diphtheria patients admitted to hospitals of the Metropolitan Asylums Board. In 1895 specimens were examined from 3,648 cases, in 1896 from 4,870 cases ; and in 1897 Sims Woodhead was able to take the bacteriological diagnosis of diphtheria as his subject for the first of a series of four Harben Lectures delivered to the Royal Institute of Public Health. Using primary cultivation on Loeffler's medium, followed, when necessary for confirmatory purposes, by growth in broth, he claimed to have found diphtheria bacilli in 95% of clinical cases. What was perhaps more interesting for the epidemiologist was his discovery of these organisms in a number of mild cases of sore throat, not diagnosed clinically as diphtheria, in fully recovered patients during convalescence, and even in healthy contacts. He insisted on keeping convalescents in hospital till they were bacteriologically free from infection, and on isolating child contacts if they were found to be carrying diphtheria bacilli, partly because they might spread the disease and partly because half of these children developed diphtheria themselves in the course of a few days.

Sims Woodhead's work affords an excellent example of the early application of public health bacteriological findings to administrative practice. The routine laboratory diagnosis of diphtheria was begun by Delépine at Manchester in 1894, and by Robertson at St. Helens in 1895. While investigating an outbreak of diphtheria at Cambridge, Cobbett (1901) drew attention to the danger of the nasal carrier.

The discovery by von Behring and Kitasato in 1890 of diphtheria antitoxin, and the introduction by Ehrlich of a method for its exact quantitative estimation, stimulated a demand in this country for preparation of the serum on a large scale. Armand Ruffer in 1894 was the first to make antitoxic serum in this country. The following year Sims Woodhead, with the help of Cartwright Wood, undertook its manufacture for use in the hospitals of the Metropolitan Asylums Board. In 1897 George Dean was appointed to the post of superintendent of the antitoxin department of the British Institute of Preventive Medicine (now the Lister Institute), situated at Sudbury (moved in 1902 to Elstree), and started on a series of investigations that contributed substantially to the present method of producing diphtheria toxin and of immunizing horses against it. In the large outbreak of diphtheria at Cambridge already referred to, Cobbett used antitoxic serum for passive protection of contacts, combined with the isolation of cases and carriers, and succeeded by this means in bringing the infection rapidly under control.

Further progress in the struggle against diphtheria was made when James Ritchie at Oxford described in 1901 a method of modifying toxins by weak acids and alkalis in such a way as to deprive them of their toxicity without destroying their antigenic power. Many years elapsed, however, before this line of investigation was developed, and it was not till the early 'twenties that Glenny and his colleagues in this country and Ramon in France introduced the formol method of detoxication that forms the basis of preparation of our modern diphtheria prophylactics.

The last great weapon in the public health armamentarium against diphtheria is the test introduced by Schick and his colleagues in Vienna in 1913 for ascertaining the susceptibility or immunity of subjects to infection. Though this test has been exploited beyond its capabilities, it provides, when carried out on groups of inoculated children, a simple and reasonably accurate index of the antigenic potency of diphtheria prophylactic agents and, when carried out on individual adults, a guide to those who need protection and those who do not.

Typhoid Fever

The discovery of the typhoid bacillus by Eberth in 1880, and its isolation in pure culture by Gaffky in 1884, opened the way for the bacteriological diagnosis of enteric fever. The difficulties, however, of culturing this organism from the faeces at a time before enrichment and selective media had been devised were very great, and the application to human serum by Widal and by Grünbaum in 1896 of the agglutination reaction recently discovered by Gruber and Durham afforded a simpler method for distinguishing enteric fever from the numerous other pyrexial diseases with which it could be so readily confused. In this country Dr. D. S. Davies, medical officer of health for Bristol, is credited by Newsholme (1935) as being the first to apply the Widal-Grünbaum test to the investigation of an outbreak of enteric fever and to show its importance in discovering overlooked cases of the disease. Delépine introduced the test into routine practice at Manchester almost immediately after its description, and by 1902 he was able to report that he had used it in 8,000 cases of suspected typhoid fever. Employing a modification of his own, he was satisfied that the error of the test when carried out on sera taken after the first week of illness was not more than 2%.

The interpretation of the results of this test became complicated by the introduction during the South African War of anti-typhoid inoculation, and by the discovery around 1900 of the paratyphoid group of bacilli, in 1903 by Smith and Reagh of flagellar and somatic antigens, in 1920 by Arkwright of the smooth–rough variation, and in 1934 by Felix and Pitt of the Vi antigen. Though the Widal-Grünbaum test is still used in practice, it has been mainly superseded for the diagnosis of enteric fever in inoculated persons by the more reliable cultural methods now available, and its main value probably lies in the detection of the chronic carrier state by means of the modified Vi-agglutination technique.

[The lecturer then summarized the early history of the bacteriological examinations carried out for public health purposes on anthrax, cholera, plague, typhus fever, smallpox, rabies, cerebrospinal fever, and Siberian cattle plague. In respect of the last disease, better known as rinderpest, he drew attention to the discovery by Burdon-Sanderson (1866 ; see also Lady Burdon-Sanderson, 1911) that the infectious agent in the blood of diseased animals was incapable of passing through an animal membrane, thus providing the first clear-cut laboratory evidence of the existence of filtrable viruses.]

[*The second lecture, with a list of references, will appear in our next issue.*]

Nearly 1,000 volumes of medical books and periodicals have been distributed through Unesco during the past two months to libraries in eight war-devastated countries. The literature was given by the Army Medical Library of Washington and the Vanderbilt University School of Medicine Library, Nashville, Tennessee. The Army Medical Library in Washington, D.C., acting upon the recommendations of Unesco, distributed to five libraries in Hungary, Poland, and Yugoslavia a total of 635 volumes of scientific periodicals and books in the field of medicine. Following an agreement between Unesco and the American Medical Library Association by which duplicate books and periodicals of American medical libraries will be made available to medical libraries in other countries, a list of duplicates has been received from the Vanderbilt University School of Medicine Library in Nashville. So far 155 volumes have been allocated to ten libraries in Austria, Belgium, China, France, Greece, Hungary, and Poland. A list of the remaining titles for which no specific allocations have been received is being circulated to more than 50 libraries in war-devastated areas.

IDENTIFICATION OF MEDICAL DOCUMENTS

BY

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To fulfil administrative requirements for cross-reference with respect to successive admissions of one and the same person to the same medical institution and to different ones, or to subserve the ends of research involving reference to original records, a system of medical documentation must make provision for identification of individual patients. *Ipso facto* the method of designation must be highly specific in the sense that it excludes the possibility of confusing two individuals. It must also be suitable for transcription by recourse to a numerical code. Otherwise it is not feasible to take advantage of current mechanical methods of sorting and tabulation involving the use of punch-cards.

For the purposes of the punch-card, numerical coding of the birth name is unsatisfactory both because it monopolizes a considerable fraction of space available for other uses and because allocation of requisite columns is highly variable. The complete birth name of an individual may require any number of letters, from a minimum of about seven—e.g., May Hall—to a maximum of about 30. For instance, Henry William Howard Waterhouse would entail the allocation of 28 columns by the alpha system of punching and sorting with respect to a single letter of the alphabet per column.

Frequency of Surnames

Equally important, though too rarely recognized, is the fact that birth names are not highly specific. Farr recognized this long ago, and emphasized its statistical implications in words which are still worthy of citation: "From the indexes of the registers for the year 1853, the probable number of persons in England and Wales bearing each of the 50 most frequent surnames has been computed. . . . The persons by whom these 50 surnames are borne amount to about 3,253,800; nearly one-sixth of the entire population of England and Wales. On an average, it seems, one person in 73 is a Smith, one in 76 a Jones, one in 115 a Williams, one in 148 a Taylor, one in 162 a Davies, and one in 174 a Brown."

In an investigation into the frequency of surnames in a Midland telephone directory we found that the following seven names accounted for 5.6% of 88,351 persons listed: Smith, 1,330 (1.5%); Jones, 965 (1.1%); Williams, 614 (0.70%); Taylor, 550 (0.62%); Green, 520 (0.59%); Brown, 502 (0.57%); Evans, 468 (0.53%).

In one year (1946) the number of new in- and out-patients treated in the Birmingham United Hospital was also about 88,000. With such an intake we might therefore expect the central file of the hospital to accumulate in the course of 10 years records of several thousand Smiths, Joneses, Williamses, Taylors, Greens, Browns, and Evanses. Evidently the task of extracting the records of an individual from a set of documents filed by birth name, or extracting the file number of an individual from a ledger of birth names, would assume alarming dimensions if there were centralization of medical documents in an administrative region.

In the long run, filing by serial code number without recourse to a ledger of birth names is therefore an administrative necessity. It is also the only practicable system of operating large-scale therapeutic trials or comparable statistical inquiries which entail recourse to detailed information not recorded on the punch-card case summary. Given a punch-card file based on diagnosis, it is possible by present methods of mechanical sorting and tabulation to run off a nominal roll (see Truelove, S. C., and Hogben, L., *Brit. J. soc. Med.*, 1947, **1**, 18) of such serial numbers to identify the location of the individual in a central file of complete medical documents with minimum effort.

Three Requirements of Coding

To subserve both ends stated above, a system of serial code numbers must conform to three requirements. It must ensure that: (*a*) two patients will rarely receive the same serial number; (*b*) the *fixed* number of ciphers employed do not make excessive demands on the available number of columns of a standard punch-card; and (*c*) record officers in different institutions will assign without difficulty the same serial number to one and the same patient.

The objective defined by (*a*) is to ensure the possibility of turning up a patient's records with the utmost dispatch. Since the complete records will necessarily contain information sufficient to distinguish occasional individuals who receive the same serial number, it is not necessary to insist on the absolute specificity of the serial number assigned to him or her. All that matters is to circumscribe the search for a particular document within narrowly defined limits. As regards (*b*) the allocation of 9 or 10 columns is certainly not excessive, being less than the mean number requisite to code a full birth name as such and on all fours with the new national registration numbers of three letters followed by seven ciphers. The remaining criterion (*c*) calls for more detailed comment. It carries with it two desiderata: (1) individual ciphers must be referable to personal information which is easily accessible to the record officer and liable to no dubiety with respect to its interpretation; and (2) such information must refer to such characteristics of the individual as do not change in his or her lifetime.

That the choice of such information must be consistent with the fulfilment of the criteria of specificity and of economy of column space imposes further limitations. In particular, it excludes sex as a single unit of classification because the specification of the two sexes leaves vacant eight out of the ten rows of a column assigned to it. It excludes birth rank for a less obvious reason. Though it would be easy to assign the birth rank to a single column by reserving the last row for tenth *or later* live births in the patient's sibship, such an arrangement would not be economical inasmuch as high-grade specificity presumes *equipartition of statistical frequency to each of a set of exclusive classes.* As it happens, more than one-third of all children are firstborn. Hence the probability that two individuals taken from a population at random will have the same birth rank is far greater than 0.1, which is the minimum attainable for a single column of 10 rows.

The desideratum specified by (1) above excludes numerical coding of blood groups because this would necessitate the performance of a laboratory test, and of birthplace because this would entail recourse to a voluminous gazetteer. Birthplace is also exceptionable on account of (2), because topographical landmarks often change in the lifetime of an

individual consequent upon redistribution of local government responsibilities. For both reasons we may also dismiss fingerprints, since their interpretation is too specialized an art, and the loss of a limb destroys the possibility of subsequent identification. Aside from this, fingerprints have associations which do not find favour with a considerable body of patients. It goes without saying that eye colour, marital status, religion, and occupation are each inconsistent with (2) above, though eminently appropriate if (1) were the only prerequisite.

Considerations stated above are largely relevant to any satisfactory method of serial-number specification attached to a birth certificate or analogous personal document for purposes other than the one which is the theme of this discussion. Admittedly, a quite arbitrary national identity number assigned at birth would dispense with the need for an *ad hoc* examination of the issue in this context; but we have as yet no guarantee that the wartime system of national identity numbers will survive, and any proposal for its permanent adoption would encounter a formidable body of public opinion suspicious of regimentation. In any case, the present system is for several reasons unsatisfactory as it stands. One is that individuals on leaving the armed Services at present receive an identity number which is not the one they had before enlistment. Another, which will be more evident at a later stage, is that it lacks the merit of making explicit information, which has otherwise to be coded separately for general use.

Six-cipher Code

The principle implicit in the last statement offers an opportunity for illustrating how it is possible to make use of a run of ciphers embodying information which is at the same time (*a*) immediately accessible to a recording officer, (*b*) invariant with respect to the lifetime of the individual, and (*c*) useful for a wide variety of statistical purposes. A hospital record must give the age of the patient, and the six ciphers which can specify this suffice to make the datum explicit on any document which bears a serial number in which they occupy a *fixed* position. For instance, the birth date of one of us is Dec. 9, 1895, that of another Aug. 16, 1925. Transcribed direct by day, month, and year without specification of the century, as in general irrelevant, these would be respectively 091295 and 160825. Clearly the act of assigning such a label to an individual involves no issue of regimentation, since no one except the record officer and hospital staff with access to the confidential documents involved would need to know the patient's number. Nor would the patient need to know it. Equally clearly, record officers in different institutions would fill in the same run of ciphers assigned to the same fixed position in the serial number in the same way. These six digits do not necessarily require six columns on a punch-card. Since there are only 12 calendar months, it would be possible to record the two ciphers standing for the month on one column by recourse to the X and Y pigeon-holes.

We have now to ask what level of specificity a six-cipher sequence based on the birth date would guarantee. A convenient measure is the chance that two individuals taken at random will have the same cipher sequence. The chance that any individual will have the same birthday as another is of the order of 1 in 360. In Britain we may put the chance that two individuals taken at random will be of the same age—i.e., that they will have been born in the same year—at about 1 in 50. Thus the number of live individuals in England and Wales with one and the same six-cipher birth-date sequence should be about 2,000.

Ten-cipher Code

By employing four additional ciphers we can greatly reduce the possibility of confusion: how greatly depends on partition of information employed to assure approximately equal relevance to each of the 10,000 compartments which four ten-row columns accommodate. Whether such partition is more or less easy is an empirical issue. Accordingly we have made an analysis of the initial run of letters in 88,000 surnames of a Midland telephone directory to explore the possibility of grouping such initials in 100 blocks of equal frequency with a two-figure code for each block—e.g.:

AA—AK	...	00	BAA—BAJ	...	04
AL	...	01	BAK—BAQ	...	05
AM—AR	...	02	BAR	...	06

If p_x is the proportion of surnames assignable to the xth block we may define a convenient coefficient of specificity (C_s) for the two relevant columns in accordance with the following definition:

$$C_s = \sum_{x=0}^{x=99} p_x^2$$

As against the theoretically realizable C_s (=0.01) a straightforward code designed as stated on the basis of information supplied by an 88,000 sample of surnames yielded the highly gratifying figure 0.01073. This result does not justify us in offering for national use the specimen surname initial code (C) printed below, since the best code for the whole nation should be based on a national sample more representative of the population than the contents of a regional telephone directory. None the less, the Midland region is fairly representative of the country as a whole, and we may therefore assert with confidence that a foolproof two-cipher surname code devised for use on the *same pattern* would prove to have a C_s not far off 0.01. The only name in our sample which requires a block to itself is Smith (1.5%). If Smiths are more common in the country as a whole than they are in the Midland region it will be possible to deal with them as we deal below with first names such as William.

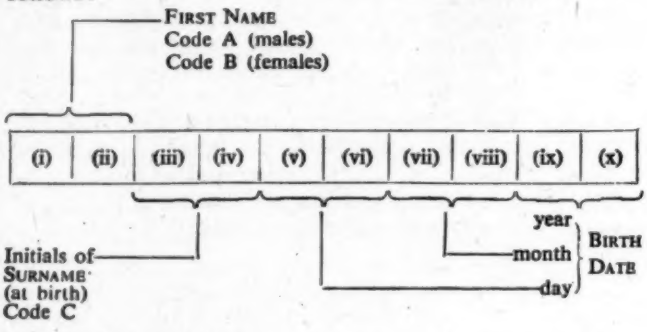
To make good use of two additional ciphers we have examined the possibility of coding first names on a principle which makes the sex of the individual explicit in the first digit. For this purpose we have prepared a frequency distribution of 3,000 *male* first names and 4,000 *female* first names in our hospital register. The result shows that certain first names have a relative frequency much higher than 0.01. Where this is so it is possible to ensure approximate equipartition of information by recourse to live-birth rank specification—e.g.:

	Code No.
Francis	15
Frank	15
Frederick, Birth rank 1	16
" " >1	17
F (excluding above)	14

By assigning the two-cipher sequence 00–49 (Code A) to males and 50–99 (Code B) to females we are able to distribute first names with a C_s equal to 0.0103. As it stands we do not claim that such a code is ideal for the nation, or even for the Midland region. We are content to assert that Codes A and B provide a pattern for a more satisfactory attempt in conformity with the requirements stated above.

The complete proposal which emerges from the foregoing analysis of surnames and first names undertaken to

test the possibility of devising a system of serial numbers easy to record and having a high level of specificity is as follows:



Frederick Henry Allinson, *born* May 12, 1917, and his twin sister Mary Alice, with one elder sib, would thus be respectively: 1701120517 and 8701120517. Two manifest advantages of this code spring to the eye. For all records on which the serial number appears, the sex of the individual is explicit in virtue of the first digit (0–4 if male, 5–9 if female) and the current age is apparent from the last two ciphers. What is equally important is that the requisite three nominal codes are each short enough to print on one side of a standard card; and the specification of the individual by recourse to the code entails access to no information of a type other than such as the recording officer has to obtain in the normal routine of completing an admission card.

The choice of the word "type" in the last sentence is deliberate, because the code numbers for the third and fourth digits refer to the *birth* surname—i.e., maiden name in the case of a married woman; but any system of filing by surname must also rely on the surname of the individual *at birth* if it is to ensure filing of documents referable to one and the same individual in one and the same place. The problem of legal adoption admits of a satisfactory solution, but need not concern us in this context, since legal adoption is a comparatively rare contingency and usually takes place at a very early age. Co-twins of unlike sex necessarily receive a distinctive first cipher, and are labelled as such by the circumstance that their serials have the same sequence of the residual nine. Co-twins of like sex with first names which have the same initial letter will usually be distinguishable, because first names with the same initial, if also common, will *de facto* have distinctive code numbers. In any case, it is no disadvantage to have the records of two twins in the same niche of a file. On the contrary, it simplifies the task of finding the records of a co-twin for research which brings into focus the nature–nurture issue.

A satisfactory figure for the specificity of the 10-cipher (nine-column) code as a whole would have to give due weight to what correlation exists between the three blocks of data. Some correlation there must be, since it is highly probable that Alberts were more common among male babies at the time of the Great Exhibition than they are to-day. In this matter history is happily on our side. Film-star notoriety rather than goodness seems to be the prevailing fashion, and film-star first names are less prone to supersaturate the already sufficiently large classes of our A and B codes than the Williams, Alberts, Edwards, Georges, Elizabeths, and Marys on which royalty rings the changes.

It is pertinent to remark that what correlations do exist do not necessarily favour confusion. Against the fact that father and son, necessarily with the same third and fourth code ciphers, are somewhat apt to have the same first name,

Code A, for Males Only

×	×								

Albert	Birth rank 1	00
	" " >1	01
Alfred		02
Arthur	Birth rank 1	03
	" " >1	04
A (excluding above) ..		05
B		06
Charles	Birth rank 1	07
	" " >1	08
C (excluding Charles) ..		09
Dais		10
David		10
D (excluding above) ..		11
Edward		12
Ernest		13
E (excluding above) ..		14
Francis		15
Frank		15
Frederick	Birth rank 1	16
	" " >1	17
F (excluding above) ..		14
George	Birth rank 1	18
	" " >1	19
G (excluding George) ..		20
Harold		21
Harry		22
Henry		23
Herbert		24
H (excluding above) ..		25
I		26
James	Birth rank 1	27
	" " >1	28
John	" " 1	29
	" " 2	30
	" " >2	31
Joseph		32
Job		32
J (excluding above) ..		26
K		26
Leonard		33
Leslie		33
L (excluding above) ..		26
M		34
N		34
O		35
Percival		36
Philip		36
P (excluding above) ..		35
Q		35
Reginald		37
Richard		37
Robert		38
R (excluding above) ..		39
Samuel		40
Sidney		41
Stanley		41
S (excluding above) ..		42
Thomas	Birth rank 1	43
	" " >1	44
T (excluding Thomas) ..		42
U		42
V		42
Walter		45
William	Birth rank 1	46
	" " 2	47
	" " 3	48
	" " >3	49
W (excluding above) ..		42
X		42
Y		42
Z		42

and hence the same first and second code ciphers, we have to weigh the fact that they necessarily have a different specification with respect to the last two ciphers of the serial. Admittedly, the last two ciphers take no stock of centenarians or near centenarians, but any danger of confusion arising from this limitation is trivial. Taking all circumstances into consideration, we have good reason to suppose that intercorrelations between the three basic blocks of data embodied in the code specification will not grossly reduce a measure of specificity computed in accordance with an assumption of independence.

Without recourse to an algebraic analysis of the problem—this will be dealt with in a forthcoming publication—we may regard the issue of specificity in the following way. No two Smiths can come in the same niche of a filing system unless born on the same day of the same year. At the present time Smith is the most common patronymic, and the number of Smiths born in Britain per day is about 30. Of these 30 Smiths 15 will be separated by the initial cipher of the serial number in the female half of the file from the remaining 15 males. The chance that two of the 15 Smiths of the same sex will have the same specification with respect to the first two ciphers of the serial is about 1 in 50. Evidently, therefore, two Smiths will rarely get the same serial number or occupy a close position in a national filing system containing records of half a million Smiths.

One minor issue which calls for comment is the occurrence of first names, such as Evelyn or Francis, which are not distinctively male or female. The proposed system takes this into account by prescribing a separate code A for the

Code B, for Females Only

×	×								

Alice	50
Annie	51
Ada	52
Amelia	52
Amy	52
Agnes	53
Ann	53
Anne	53
A (excluding above)	54
Barbara	55
Beatrice	55
B (excluding above)	56
Catherine	57
Charlotte	57
Clara	57
Connie	57
Constance	57
C (excluding above)	54
Dorothy	58
Doris	59
Dora	59
D (excluding above)	60
Edith	61
Elizabeth	62
Elsie	63
Ethel	64
Eliza	64
Eleanor	64
Emily	65
Emma	65
Eileen	66
Edna	67
Eva	67
Evelyn	67
E (excluding above)	60
Florence Birth rank 1	68
" " >1	69
F (excluding Florence)	70
Gertrude	71
Grace	71
Gladys	72
Gwendoline	72
G (excluding above)	70
Hilda	73
H (excluding Hilda)	74
Ida	75
Irene	75
Ivy	75
I (excluding above)	76
Jane	77
Jean	77
Jessie	77
Joan(ne)	78
Joy(ce)	78
Kathleen	79
K (excluding Kathleen)	80
Laura	81
Lillian	81
Lily	82
Louisa	82
L (excluding above)	80
Margaret Birth rank 1	83
" " >1	84
Margery	85
Marjorie	85
Madge	85
Mary Birth rank 1	86
" " >1	87
Mabel	88
Maria	88
Marie	88
Marion	88
Maud	89
Minnie	89
Muriel	89
Martha	90
May	90
Millicent	90
M (excluding above)	91
Nellie	92
Nora	92
Norah	92
N (excluding above)	91
O	93
Patricia	94
Pauline	94
Phyllis	94
Polly	94
P (excluding above)	93
Q	93
Rosa	95
Rosalind	95
Rosanna	95
Rose	95
Rosemary	95
Rosetta	95
Rosina	95
R (excluding above)	96
S	97
T–U	96
Violet	98
Vera	98
V (excluding above)	96
Winifred	99
W (excluding Winifred)	96

Code C. Initial Letters of Surname at Birth

		×	×						

AA–AK	00
AL	01
AM–AR	02
AS–AZ	03
BAA–BAJ	04
BAK–BAQ	05
BAR	06
BAS–BD	07
BEA–BEK	08
BEL–BEZ	09
BF–BJ	10
BK–BN	11
BO–BQ	12
BRA–BRN	13
BRO–BRZ	14
BS–BZ	15
CA–CG	16
CH–CK	17
CL–CN	18
COA–COL	19
COM–COP	20
COQ–COZ	21
CP–CZ	22
DAA–DAU	23
DAV–DAZ	24
DB–DI	25
DJ–DZ	26
EA–EL	27
EM–EZ	28
FA–FH	29
FI–FL	30
FM–FO	31
FP–FZ	32
GA–GH	33
GI–GN	34
GO–GQ	35
GRA–GRE	36
GRF–GZ	37
HAA–HAL	38
HAM–HAQ	39
HAR	40
HAS–HAZ	41
HB–HH	42
HIA–HIL	43
HIM–HOK	44
HOL	45
HOM–HOU	46
HOV–HUF	47
HUG–HZ	48
IA–IZ	97
JA–JD	49
JE–JOM	50
JON–JZ	51
KA–KH	52
KI–KZ	53
LA–LD	54
LE–LH	55
LI–LN	56
LO–LZ	57
MAA–MAN	58
MAO–MAR	59
MAS–MD	60
ME–MI	61
MJ–MOQ	62
MOR–MZ	63
NA–NE	64
NF–NZ	65
OA–OZ	97
PAA–PAR	66
PAS–PEN	67
PEO–PH	68
PI–PN	69
PO–PRH	70
PRI–PZ	71
QA–QZ	97
RA–RG	72
RH–RI	73
RJ–ROB	74
ROC–RZ	75
SA–SB	76
SC–SHA	77
SHB–SHZ	78
SI–SM (excl. Smith)	79
SMITH	80
SN–SS	81
STA–STN	82
STO–SZ	83
TA–TD	84
TE–TH	85
TI–TO	86
TP–TZ	87
UA–UZ	98
VA–VZ	98
WAA–WAQ	88
WAR–WAZ	89
WB–WG	90
WH	91
WIA–WILK	92
WILL	93
WILM–WIZ	94
WJ–WOO	95
WOP–WZ	96
X–Z	98

first two ciphers if the individual is a male in contradistinction to Code B for females. Thus Evelyn, a male, being known as such, is "E (excluding above) 14" in Code A. Evelyn, a female, is "Evelyn 67" in Code B.

In the best of possible worlds clerical errors must occasionally occur; but clerical errors in transcription of a code such as this could be open to supervisory inspection at source by recourse to a standard admission card, explicitly recording a woman's maiden name and the birth date of an individual irrespective of sex. As a safeguard against erroneous statement on the part of the patient or the relatives of the patient it would be easy to specify an appropriate *check question* routine for the record officer engaged in filling in the standard admission slip or card. The most generous allowance for occasional errors of this sort can have little weight if the alternative is a system which necessarily assigns different serial numbers to the same individual treated in different institutions and relies on a name-and-address ledger for identification of the numerical locus of an individual in a large-scale file.

Conclusion

Our submission is that a code based on the same pattern as the Birmingham system, though not necessarily satisfactory in detail for the nation as a whole, would ensure:

(*a*) That a record officer in Beachy Head would assign to a commercial traveller treated for fracture in the Birmingham Accident Hospital and subsequently re-examined in Bedford the same serial number, which would identify his position in the record file of the Birmingham or Bedford institution; and he or she would hence be able to obtain therefrom information relevant to treatment with minimum effort and delay.

(*b*) That all records of one and the same individual successively admitted to one and the same institution either as an in-patient or as an out-patient would be available for research in one and the same niche in its file of medical documents without recourse to a name–address admission-and-discharge register.

A delegation from Charing Cross Hospital visited five hospitals in Europe to study methods of hospital design and planning. The five hospitals were the Neue Bürgerspital in Basle; the Polyclinic in Zurich; the Kinderspital in Zurich; the Beaujon Hospital in Paris; and the New Southern Hospital in Stockholm. This visit was arranged by the King Edward's Hospital Fund for London, and the long report which was subsequently prepared by Sir John Stewart-Wallace, Mr. Norman C. Lake, Dr. H. W. C. Vines, and Dr. A. Doyne Bell was reviewed in the *Journal* of Nov. 1, 1947 (p. 704). The report has now been published and copies are available, price 1s., from the Honorary Secretaries of the Fund at 10, Old Jewry, London, E.C.2.

TREATMENT OF HYPERIDROSIS

BY

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The condition of essential hyperidrosis is seen in those parts of the body which are affected by mental or emotional sweating, as opposed to thermoregulatory sweating. These are the palms of the hands, the soles of the feet, all the digits, and to a smaller extent the head and face.

Hyperidrosis is met with in varying degrees of severity, from a slight excess of normal sweat-gland activity to a condition in which sweat drips from the skin continuously during waking hours, often leading to considerable embarrassment and to interference with activities, even to the extent of making the patient's usual work impossible. The milder types may be controlled by formalin foot and hand baths, with some risk of a dermatitis developing, or by painting with a solution of alum, but such treatment is of no avail in the severe degrees. *X*-ray treatment must be pushed to a dangerous limit in order to damage the secreting glands in the skin, and there is grave danger of a chronic dermatitis, or even skin necrosis, resulting. On the other hand, section of the sympathetic pathway to the affected part provides a safe and certain cure. This procedure cuts off all sudomotor activity and results in an immediate and profound dryness of the skin in the distribution of the divided fibres.

Previous reports (Adson, Craig, and Brown, 1935; Telford, 1938; White, 1939) have shown that hyperidrosis can be abolished by such operations, but the follow-up periods were short. (Out of five cases in each of the series by Adson *et al.* and by White only one was seen more than twelve months after operation, and out of three cases reported by Telford only one had been followed up for a prolonged period.) In view of the fact that regeneration of divided sympathetic fibres occurs in animals (Langley, 1894, 1897; Lee, 1929; Grimson, 1946) and that there is strong evidence that it takes place in man (Simmons and Sheehan, 1939; Haxton, 1947) a longer follow-up is necessary to evaluate the permanency of the cure.

The present study includes the follow-up of several cases for much longer periods. In all, 12 cases of severe hyperidrosis have been treated by sympathetic section in this clinic over the past 15 years, and have been followed up with great care. Operation was considered to be justified in cases in which the sweating was a severe nuisance or an embarrassment, or when it actually interfered with the patient's occupation.

Operations

Three operations have been used. For hyperidrosis of the face and neck section of the sympathetic chain has been carried out above the middle cervical ganglion, with dislocation of the upper end by drawing it through the sternomastoid muscle. The incision employed has been in the line of the skin folds of the neck, centred on the posterior border of the sternomastoid muscle at the midpoint of its length. The muscle is retracted forwards and the sympathetic chain is found lying on the longus cervicis muscle when the carotid sheath and its contents are retracted medially. It is worth recording that a partial result has been seen after the undoubted division of a sympathetic filament in this region, and on second exposure a further filament was found, situated more medially, division of which gave a completely satisfactory result. Therefore the region posterior to the common carotid artery and internal jugular vein must be carefully searched for reduplication of the cervical sympathetic chain.

For hyperidrosis in the hands the operation employed is the Telford (1935) procedure of thoracic sympathotomy below the third thoracic ganglion, with dislocation of the upper cut end after section of the rami to the second and third thoracic ganglia. This operation, carried out by the anterior approach, is a relatively easy one to the experienced hand, and the convalescence is rapid and free from pain. It has the advantage over cervico-thoracic ganglionectomy that the disfiguring Horner syndrome is entirely avoided by leaving intact the first thoracic white ramus communicans.

Lumbar sympathectomy is now done through separate oblique muscle cutting or splitting incisions in the flanks, with extraperitoneal approach to the sympathetic chains. From 3 to 6 cm. of each chain, centred on the third lumbar vertebra, are removed. Both sides are done at one session, under spinal analgesia, and convalescence has been singularly uneventful.

Results.—The immediate result has been a complete anidrosis in the zone of sympathetic denervation, the extremity being quite dry. The inevitable vasodilatation does not appear to have caused any trouble. For practical purposes the cure seems to be permanent, since in no case has hyperidrosis returned, the most that has been noticed in the way of sweating being a slight moistness of the hands when warm. The patients have all been most grateful for the relief obtained in this uncomfortable and embarrassing condition.

Case Reports

Case 1.—A meter inspector aged 38 noticed excessive sweating of the feet one year before admission. The condition was so bad that in the course of his daily round of 12 to 14 miles he had to empty his shoes of water and wring out his socks six times. His feet became macerated, and he was laid up for nine months, receiving treatment in various hospitals for mycotic infection with no benefit. Bilateral lumbar sympathectomy was carried out in January, 1932, by Prof. Telford, and the feet were dry and healed in three weeks. When last seen, in October, 1941, he remained free from trouble and the feet were quite dry.

Case 2.—A female cotton-packer aged 16 was troubled with excessive sweating of the hands and feet, with blistering of the hands in hot weather which prevented her from working. The Telford operation was carried out on both sides in September, 1937, and was followed by complete dryness of the hands. They became slightly moist two years later, and have remained so without getting any worse. She has had marked gustatory sweating of the forehead and face since 1943, six years after the operations. The chief stimulant is cheese, and now the thought of this brings on the sweating. On Oct. 20, 1945, the whole body was heated strongly in a radiant-heat apparatus. After remaining dry for ten minutes the hands suddenly began to sweat profusely. A trace of perspiration was seen on the forehead. On March 11, 1947, paravertebral block of the sympathetic chains in the upper thorax with 2% procaine resulted in a great increase in skin temperature and electrical resistance in the hands but no sensory or motor disturbance.

Case 3.—A man aged 22 had profuse sweating of the hands for three months which resulted in excoriation of the skin on the pads of his fingers. He had to give up his work in a paper mill because the sweat spoilt the materials which he handled. In November, 1937, the Telford operation was carried out on both sides, and was followed by immediate and complete dryness of the hands. He was last seen two years later, at which time he remained completely cured.

Case 4.—A male cleaner aged 48 had a twelve-months history of hyperidrosis in the hands, with swelling and cheiropompholyx which made them useless for work. On April 30, 1938, he had a Telford operation on the right side, following which the right hand has remained warm and dry.

The left hand has also improved, though it still sweats. No abnormal sweating of the face has been noticed. At a test on July 10, 1945, both hands were very warm, the right being dry and the left sweating. Measurement of the electrical conductivity of the skin of the digits was made before and after block of the right ulnar nerve with 2% procaine, and after strong heating of the body. The method is described elsewhere (Haxton, 1947). The test shows that sudomotor activity was present in the right upper limb seven years after sympathetic section, but in spite of this the clinical result is good and the hyperidrosis remains cured.

Electrical Conductivity of the Skin in Microamperes

	Fingers of Right Hand					Fingers of Left Hand				
	1	2	3	4	5	1	2	3	4	5
Start	2	6	8	10	10	20	45	50	45	40
5 mins. after injection ..	5	12	15	15 : 5	4	—	—	—	—	—
10 „ „ „ ..	5	15	18	18 : 2	1	—	—	—	—	—
10 „ heat	10	25	25	20 : 2	1	35	50	50	50	50

NOTE.—The sign : indicates the midline of the ring finger.

Case 5.—A lad aged 16 had severe hyperidrosis for 10 years. It was so bad that when he was reading a book the sweat used to run from his hands down to the elbows and drip from there on to his trousers. He could not write without a double sheet of blotting-paper under his hand to catch the drips. He was unable to go dancing because of the trouble. In January, 1939, he had a Telford operation on both sides, with immediate and complete relief from the hyperidrosis. He has remained cured, though when very warm he has noticed slight sweating of both hands since the beginning of 1945. In the last three years he has noticed gustatory sweating on the face and forehead on eating sour things, although these areas have remained free from sweating in response to heat.

Case 6.—A female domestic servant aged 26 had excessive sweating of the hands for three years. She was also troubled with Raynaud's disease in the hands, which was progressing in severity. In June, 1939, a Telford operation was performed on both sides. The immediate result was excellent, both for the hyperidrosis and for the Raynaud spasms. When seen in February, 1941, however, the latter had returned and the condition was little better than before operation, although the hands remained dry.

Case 7.—A female warehouse assistant aged 18 had hyperidrosis of the hands and feet for three years, severe enough to interfere with her work. She had a Telford operation on the right side in October, 1939, and on the left side in January, 1940. The hands have remained completely dry since then, but within two months of operation she noticed gustatory sweating on taking cheese or sweetmeats, and particularly on eating chocolate. This condition persisted unchanged when she was last contacted in May, 1947.

Case 8.—A female school attendance officer aged 35 had a history of cold and damp hands and feet for as long as she could remember. The sweating of the feet was so bad that it caused her stockings to rot. She was troubled with Raynaud attacks in the hands in cold weather, and suffered from severe chilblains on the hands and feet all the winter. When examined the hands and feet were cold and quite wet with perspiration. In September, 1943, a bilateral lumbar sympathectomy was carried out, and in October, 1943, Telford operations were done on both sides. Since then the hands and feet have remained dry, but the fingers are again red and painful in cold weather. She noticed gustatory sweating of the face on taking vinegar six weeks after the operations. The hyperidrosis, then, has been cured by operation, but the sensitivity to cold has been only partially relieved.

Case 9.—A housewife aged 36 had a six-months history of hyperidrosis of the left side of the face when warm or embarrassed. The sweating extended to the lower border of the mandible and was accompanied by flushing and tingling of the skin. For the same period she had a marked rhinorrhoea confined to the left side, for which she had two nasal operations without benefit. In July, 1945, the left cervical sympathetic chain was sectioned above the middle cervical ganglion. The result was complete anidrosis of the left side of the face and neck, and cessation of the rhinorrhoea. The cure remained complete when she was seen in May, 1947. She had, of course, pronounced Horner's syndrome, but this is well concealed by the strong concave lenses which she normally wears.

Case 10.—A man aged 22 had suffered from hyperidrosis, mainly of the face, when at work, at the cinema, or after hot meals, and the condition was causing him considerable worry and embarrassment. In June, 1946, a bilateral section of the cervical sympathetic chains was carried out above the middle cervical ganglion. The immediate result was complete dryness of the face and bilateral Horner's syndrome. He was tested three months later by strong radiant heat to the body and limbs, when profuse sweating was induced all over, except for the head and neck down to the level of the second rib, which remained quite dry. When he was last examined, in May, 1947, the cure remained complete.

Case 11.—A machinist aged 22 had had excessive perspiration of the hands and feet for as long as she could remember. The sweat dripped from her fingers at times. She had also noticed slight sweating of the face on eating sauce. In August, 1946, she had a Telford operation on both sides, and when tested by strong radiant heat several weeks later she sweated profusely up to the third intercostal space, and remained dry above that level, including the upper limbs, head, and neck. When seen on May 15, 1947, the cure remained complete in the hands, and the feet still sweated excessively. Her slight gustatory sweating remained as before operation.

Case 12.—A coach painter aged 20 was troubled with pronounced sweating and flushing in a small area on the ulnar border of the left forearm just above the wrist. The syndrome came in attacks, lasting two to nine hours, when he was nervous or making a mental or physical effort. This condition had been present for four years. On March 11, 1947, he had a left thoracic sympathotomy, with immediate cessation of the hyperidrosis, and he has had no further trouble with it since.

Discussion

Five of these cases have been followed up for more than seven years after operation (average 8.6 years), and in none of them has the hyperidrosis returned. It can therefore be claimed that a prolonged and probably permanent cure is effected by this treatment. Two of the cases reported slight sweating of the hands two and six years after operation, and this has continued, unchanged in degree, up to the time of writing. In one of these cases this slight moistness of the hands was abolished by a paravertebral block of the sympathetic chains in the upper thorax, and this, along with the accompanying rise in skin temperature, indicates that regeneration of sympathetic fibres has taken place. In spite of this, however, there is no indication that more than a very slight degree of sweating returns, and from a practical standpoint the patients remain cured.

The causes of hyperidrosis can be divided into those known and those unknown. Of the former, irritative lesions affecting the sympathetic pathways in the spinal cord or at any point between it and the periphery have been associated with hyperidrosis. Syringomyelia, for example, may be a cause of excessive sweating of the face (Wilson, 1936). Pressure on the fasciculus of sympathetic fibres in the lower trunk of the brachial plexus (Telford and Stopford, 1931) by a cervical rib is an uncommon cause of hyperidrosis, usually affecting one hand only (Telford, 1942). In hyperidrosis of the hands, therefore, a radiograph should be taken to exclude this possible cause. This type is cured at once by removal of the cervical rib, or in some cases by division of a tense fibrous band in the scalenus medius muscle.

For most of the cases no definite cause can be found, and the explanation remains obscure. Psychic disturbances have been blamed (Cobb, 1938), but the development of the condition before the age of 10, as in two of the cases reported here, is against this theory, as is the very localized distribution of the hyperidrosis in some cases—for example,

Case 12. The theory of Leslie-Roberts (1934) that the condition is due to abnormal function of mesenchymal cells in the dermis is hard to reconcile with the spontaneous development of the trouble in a localized area of skin, and with the finding that the hyperidrosis does not return although regeneration of the sympathetic fibres takes place. If, as he believes, these fibres function as a trigger mechanism for starting the excessive sweating, then any return of sympathetic activity should provoke the full response, since the sweat glands do not undergo degeneration after sympathetic denervation (Adson *et al.*, 1935). Evidence of sympathetic overactivity is present in some cases of hyperidrosis in the form of excessive vasospasm, resulting in acrocyanosis or in attacks of the Raynaud phenomenon. Most cases are, however, free from these manifestations, and the disturbance is most likely due to excessive activity in some localized part of a sudomotor centre, probably in the hypothalamus.

No fewer than four of the patients whose cases are reported above had observed that after the Telford operation of thoracic sympathotomy the eating of food was accompanied by sweating of the forehead and face. The foods which provoked the strongest reaction differed in these cases, being cheese in one, chocolate in another, and vinegar in the third and fourth. The latent period between operation and the first detection of the sweating varied between six weeks and six years, and in three cases the condition has persisted unchanged for three to five years. The patients state characteristically that on eating the appropriate food, usually a strongly flavoured food, they feel a tingling or warm sensation in the face or scalp, accompanied by flushing of the face, and in a short time beads of sweat appear, mainly on the forehead but also in the circumoral region. The condition is not severe enough to cause the patient much trouble or embarrassment.

The gustatory sweating has not previously been reported as a complication of upper-limb sympathectomy, although its occurrence after superior cervical ganglionectomy has been noted. Conflicting theories have been advanced in explanation, and indeed it is difficult to account for sweating occurring after the sudomotor pathways have been divided. (Thermoregulatory sweating on the head and face is almost or completely abolished by preganglionic operations for the upper limb.) This fascinating phenomenon is the subject of a special study which will be reported later.

Summary

A study of 12 cases of hyperidrosis treated by sympathetic section, five of them followed for more than seven years, has shown that the operation affords a prolonged and probably permanent cure for this uncomfortable and sometimes disabling condition.

Gustatory sweating of the head and face is a frequent development after the upper-limb operations.

I wish to express my grateful thanks to Prof. Telford for his stimulating interest in this work, and for permission to report on his cases.

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IMMEDIATE PROSTATECTOMY FOR RETENTION OF URINE

BY

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In recent times so many different procedures have been advocated for dealing with cases of benign prostatic hypertrophy that it is becoming increasingly difficult to estimate the value of new methods of treatment. This difficulty has been amply shown by the conflicting views put forward at discussions which took place in 1946 at the Medical Society of London and at the Annual Meeting of the British Association of Urological Surgeons. It seems important, therefore, for surgeons employing new methods to publish their results so that their experiences may be shared by others, and this reason prompts me to place on record a small series of cases.

On going through my case records some years ago I was shocked at the bad results they revealed: in spite of refusing radical operation to a big proportion of cases, the mortality rate was appallingly high. Among 27 cases of permanent suprapubic cystotomy there were 6 deaths (22%), and the rate for prostatectomies was over 15% (Table I, Series I). Unfortunately, this does not appear to

TABLE I.—*Results of Treatment in Cases of Benign Prostatic Hypertrophy*

	No. of Cases	No. of Deaths	Mortality Rate
Series I.—82 cases: 52 (63%) submitted to radical operation			
Suprapubic prostatectomy, I or II stage	38	7	15·4%
Perurethral prostatectomy (McCarthy)	14	1	
Permanent suprapubic cystotomy	27	6	22·2%
No operation	3	2	66·6%
Series II.—132 cases: 106 (80%) submitted to radical operation			
Suprapubic prostatectomy, I or II stage	11	1	8·5%
Perurethral prostatectomy (cold punch)	95	8	
Permanent suprapubic cystotomy	23	6	26%
No operation	3	1	33·3%

be an isolated experience; for instance, Harbord (1943) records 15% for 94 cases of suprapubic prostatectomy. Owing to these depressing figures my attention was directed to the perurethral operation with the Thompson cold punch, and this method was used almost exclusively for the next series of over 100 cases (Table I, Series II). Though this resulted in diminished mortality, a big drop in the number of patients treated by permanent suprapubic cystotomy, and a welcome rise in the operation rate, the method was not entirely satisfactory. A very high degree of technical ability, which can be acquired only after considerable experience, is required for the successful use of the cold punch, and the need for intensive after-care puts a big strain on the staff where cases have to be nursed in the general surgical wards of a busy hospital. Furthermore, there is a definite recurrence rate (though admittedly dependent on the skill of the individual surgeon); haemorrhage is sometimes very difficult to control, and various complications such as extravasation or urethral damage may arise. Hoffman and Werthammer (1946) even go so far as to state that "statistics show that approximately one out of three cases of transurethral resection of the prostate gland develops complications."

For some considerable time the belief has been gaining ground that gradual decompression is not necessary for treatment of cases of urinary retention. Ten years ago Creevy (1938) concluded that "gradual decompression should be abandoned." He reached this conclusion after treating two groups of 120 cases with more than 500 ml.

of residual urine—one series by gradual decompression and the other without regard to the rate of emptying—the mortality of each group being almost identical. More recently other surgeons have supported the principle of early operation; for instance, D. K. Rose (1945) stated: "Gradual decompression is omitted in fact and in principle, because as a normal or particularly a gradually obstructed bladder empties, its pressure increases. . . . The patient is operated on from the street in better health than from the 'sulfa, catheter, anticipatory, lost appetite, and lessened physiological tone' bed." Moreover, preliminary drainage by catheter or suprapubic tube carries a high mortality, mainly from the resulting infection.

Skyrme Rees (1947), in recording 643 cases of benign prostatic enlargement from Birmingham, found 18 patients had died during gradual decompression of the bladder by catheter, and of 106 cases treated by suprapubic drainage 30 died in hospital (28%). Further, from the results of 64 post-mortem examinations he concluded "by far the commonest cause of death after surgical treatment was severe sepsis in the urinary tract." In addition there are other disadvantages of preliminary drainage. For instance, Wardill (1946) is reported as saying: "I do not believe in permanent suprapubic drainage. If a tube were put into the bladder it might be found that it did not in any way improve the patient's condition. The same applies to catheter drainage for any length of time. I believe that often the enlarged prostate pushed its way up into the bladder and that the ureters were actually obstructed by the prostate itself." My own experience has proved that a permanent suprapubic tube is extremely unsatisfactory for the type of patient predominant in my clinic, most of whom come from a sparsely populated rural area.*

Immediate Prostatectomy

In this country it was Wilson Hey (1945) who first used immediate operation for a large series of cases, and he showed a mortality rate of only 6% for his "aseptic operation." Later figures were even better—24 deaths in 565 consecutive cases—4.3% (Hey, 1946). As Hey's procedure abolished the use of a suprapubic tube, gave a short convalescence, and required a minimum of post-operative care, it seemed a better operation for routine use than the complicated technique of the cold punch. The method of "immediate prostatectomy" was therefore adopted for all cases in my next series irrespective of their condition, though a perurethral operation was still used where it appeared specially indicated, such as for dealing with small fibrous glands. This term is used in preference to "aseptic prostatectomy" because, though asepsis is of paramount importance and an ideal to be aimed at, in practice it is very difficult of attainment for various reasons. Thus a high proportion of my cases had been catheterized before admission, a few were referred after they had already been treated by either an indwelling catheter or a suprapubic tube, and, lastly, where the diagnosis was in doubt some cases were cystoscoped immediately before operation.

More recently Millin's (1945) retropubic operation has been performed; in my hands it gives better control of bleeding and there is much less chance of leakage from the suture line in infected cases. At the same time the principles laid down by Hey have been adhered to and immediate operation is practised wherever possible, cases of acute retention being done as emergencies where practicable, or else a suprapubic needle is inserted for a few hours until operation can be undertaken. The actual operative technique employed differs little from Millin's original description, but a V-shaped wedge is excised from the posterior margin of the prostatic rim in every case. Spinal anaesthesia with heavy "nupercaine" by the volumetric method (Hunter, 1945) is employed as a routine, but in some of the worst cases a rectus muscle block and cyclopropane have been used with satisfactory results.

Table II is a complete record of cases from the first immediate prostatectomy, for unless every case is recorded any series of figures is without much value. It is difficult to define "chronic" retention, particularly when no catheter is passed before operation to determine the amount of residual urine: I have therefore classed as chronic retention only those cases which showed a distended bladder with overflow incontinence. All cases not classed as acute or chronic retention have been grouped together under the heading "prostatic syndrome," and they include cases referred after a previous suprapubic cystotomy.

TABLE II.—*Results of Treatment by Immediate Prostatectomy*

Series III.—141 *cases:* 138 (98%) *submitted to radical operation*

	No. of Cases	No. of Deaths	Mortality Rate
Suprapubic prostatectomy (Hey or Millin) ..	115	9	7·2%
Perurethral prostatectomy (cold punch) ..	23	1	
Permanent suprapubic cystotomy	0	—	—
No operation*	3	3	100%
Cases of acute retention	70	4	5·7%
Cases of chronic retention with overflow ..	27	3	11·1%
Cases of prostatic syndrome	41	3	7·3%

* Aged 76: admitted with acute retention and cardiac failure; died the same day. Aged 76: admitted with acute retention and cerebral thrombosis; died the 6th day. Aged 71: admitted with chronic retention, uraemia, pyelonephritis, and bronchitis; died the following day.

Deaths

Detailed examination of Table III shows that of the four deaths out of 70 cases of acute retention two were not treated by immediate operation. Case 2 was admitted with

*Since this paper was completed I have successfully removed the prostate from a patient who had been treated by permanent drainage and was in such a miserable condition that he had twice been in another hospital after attempts at suicide.

TABLE III.—*Details of Deaths in Series III*

Case No.	Age	Condition on Admission	Blood Urea mg./100 ml.	Pre-operative Treatment	Type of Operation	Time and Cause of Death
1	78	Acute retention B.P. 260/140	114	Nil	Hey	9th day. Pneumonia and uraemia
2	73	Acute retention; pneumonia	46	10 days cath. and for chest	,,	63rd day. Pneumonia and cardiac failure
3	76	Acute retention; cardiac failure	26	16 days cath. and for heart	Millin	8th day. Cardiac failure. Necropsy also showed carcinoma of stomach
4	82	Acute retention	26	Catheterized before admission	,,	8th day. Cardiac failure and senility
5	67	Chronic retention; oedema of legs	133	Nil	Hey	8th day. Uraemia and myocarditis; post-op. clot retention
6	77	Chronic retention	—	5 weeks in bed at home	,,	5th day. Bronchopneumonia
7	73	Chronic retention; oedema of legs	266	Nil	Millin	19th day. Cardio-renal failure after blood transfusion
8	61	Prostatic syndrome	39	Nil	Hey	21st day. Septicaemia from wound sepsis—cross-infection in ward
9	88	Senile: permanent suprapubic tube	40	Bladder wash-outs and for heart	,,	10th day. Cardiac failure and senility
10	79	,, ,,	37	Bladder wash-outs	Punch	19th day. Cardiac failure 2 days after closure of suprapubic sinus under local analgesia

severe bronchitis, and was treated conservatively till the chest was better. Unfortunately he had a relapse about 12 days after operation, and finally died on the 63rd day. Case 3 was admitted with cardiac failure and auricular fibrillation. I therefore attempted to tide him over with catheterization, but when this had failed to relieve him and the cardiac condition had improved operation was undertaken. Possibly these patients might have survived had they been treated with simple suprapubic drainage. In neither instance was there evidence of much renal damage, and therefore not such strong contraindication to tube drainage and its associated sepsis.

Among the cases of overflow retention there were three deaths out of 27 operations. Case 5 had a bad setback with post-operative clot retention, and this was a material factor contributing towards his death. Case 6 had been kept in bed for five weeks before I saw him, and this fact probably contributed to the onset of the chest condition to which he succumbed. Case 7 was a bitter disappointment: in spite of an initial blood urea of 266 mg., he made good but slow progress till the 19th day. At this stage it was decided to expedite his recovery with a blood transfusion. While this was in progress he had a rigor followed by left-sided facial paralysis, and died shortly afterwards. Necropsy showed a poor myocardium, and Dr. H. R. Mavor, the pathologist, considered death was due to transfusion reaction.

Of the group classified as "prostatic syndrome," Case 8, a fit man of 61, developed mild wound sepsis, but unfortunately at that time there was an outbreak of streptococcal infection in the ward, and he died on the 21st day from cross-infection: blood culture showed a haemolytic streptococcus. Cases 9 and 10 both insisted on having something further done as they were so miserable with their suprapubic tubes: in each instance they were advised against further operation. Case 9 had refused to have his tube put back when it was taken out by his doctor for routine replacement, and was in a miserable condition owing to a suprapubic fistula. Case 10 always had a low-grade infection around his tube, and this resulted in an unpleasant eczematous condition of the genitalia.

Commentary

Admittedly it is difficult to draw conclusions from a small series of cases, and owing to the advent of new sulphonamides and penicillin the three series quoted here are not strictly comparable. However, it is submitted that the figures shown give strong support to the theories put forward by Wilson Hey (1945), who maintains that "post-operative uraemia is due to infection and is encouraged by any method of slow decompression, open drainage, or instrumentation." Certainly it has been my experience that cases catheterized before admission were far more apt to give trouble during their convalescence.

If only selected cases are submitted to radical operation a low mortality rate can be obtained, but emphasis is laid on the fact that *all* my cases are included in this report, and some were extremely sick patients and really deplorable operative risks.

The benefits of immediate prostatectomy for the patient with retention of urine are very great, for he is spared prolonged and sometimes painful pre-operative treatment and a long illness. Some notice must also be taken of the economic factors involved, as the rapid recovery of patients is most necessary at the present time, when there is such a shortage of hospital beds.

Attention to details in treatment is of paramount importance, for even a comparatively trivial setback, such as a blocked catheter, may have serious consequences in elderly and decrepit patients. All cases get out of bed the day after operation, and to this may be attributed the low incidence of chest complications. The majority go home in good condition about the 12th to 16th day.

Summary

A consecutive series of 141 cases of benign prostatic hypertrophy is recorded; 138 were submitted to radical operation.

Except on very rare occasions, drainage before operation, whether by catheter or suprapubic tube, is not considered necessary or desirable.

There were 97 cases of retention of urine which, wherever feasible, were treated by immediate prostatectomy: 7 (7.2%) died; 70 were operated on for acute retention, with 4 (5.7%) deaths.

As many cases were admitted in very poor condition, the results shown are considered satisfactory. It seems that the method of immediate prostatectomy is well worthy of an extended trial.

I am indebted to Dr. J. Clutton Brock, who was responsible for most of the anaesthetics, and to my house-surgeon, Mr. P. F. Philip, for his help in compiling statistics and for doing some of the emergency operations on my behalf.

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SOME SIMPLE OBSERVATIONS ON TRANSFUSION REACTIONS

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During the training of several hundred transfusion orderlies it was possible to make some simple observations on transfusion reactions. It was essential that these orderlies should be able to perform venepuncture and to carry out transfusions themselves lest at any time under active service conditions the medical officer was not available. In order to give them the opportunity of acquiring the technique of inserting needles into veins, the majority of the orderlies volunteered to undergo venesection and subsequent reinfusion by their colleagues, under the supervision of one of the instructors. The volunteers were each venesected to the extent of 440 ml. of blood, and their own citrated blood was reinfused. In this way 324 collections and reinfusions of blood were performed, and in addition 56 infusions of glucose-saline, each of 540 ml., were given. The reactions observed are described.

Febrile Reactions

Oral temperatures were recorded by leaving a thermometer *in situ* for at least three minutes, and records were taken before, and at hourly intervals for four hours after,

infusions. Out of a total of 324 infusions of blood a rise of temperature was observed on nine occasions, an incidence of 2.8%. Using the classification of Riddell (1939), seven of these reactions were Grade II (2.2%) and two were Grade III (0.6%). It was possible to state the probable cause of these reactions in all but one case.

Investigation of the first reaction showed that a new orderly had inadvertently taken a set from the non-sterile pile unknown to the supervising medical officer. This was a Grade II reaction, and that it was not more severe was probably explained by the fact that the set had been recently assembled from carefully washed components, and by the fact that the blood was fresh and therefore still retained some bacteriostatic properties.

The second febrile reaction occurred in a volunteer reinfused with his blood, which had been collected into a sample of sodium citrate free from moulds but containing numerous small particles such as are not infrequently present in bottles of crystalloid transfusion fluids. A Grade III reaction ensued, but an interesting feature of this case was that the onset of the rigor was delayed for some two hours after the end of the transfusion.

For the third observed febrile reaction no explanation could be found, but the remaining six reactions were very interesting. It was customary to use "giving" sets assembled and sterilized by the transfusion orderlies, or sets recently issued from the Army Blood Supply Depot. One day it was discovered that an orderly had collected sets sterilized eighteen months previously. Although the "cellophane" wrapping had lost its "crispness," these sets were still sealed, and it was therefore decided to use them. Out of five infusions three subjects developed Grade II reactions. The following day only three subjects were reinfused with these old sets, and all developed a febrile reaction, including one Grade III reaction.

No febrile reactions have followed the 56 infusions of glucose-saline, but it is of interest to note one false reaction. In this particular case it was found that the subject had a temperature of 102° F. (38.9° C.) four hours after the infusion. He was, however, found to be suffering from acute follicular tonsillitis.

Infusions

Duration of Blood Storage.—In most cases the reinfusion was started within one hour of collection, but in 11 cases the blood was stored for two days and in 20 cases for seven days before reinfusion. The blood was cleanly and properly collected, and immediately, accurately, and continuously refrigerated between 2 and 6° C. In none of these 31 cases did a febrile reaction follow the infusion.

Temperature of the Infusion Fluid.—In 36 infusions of glucose-saline the fluid was given at room temperature, while in the other 20 the fluid was warmed in a bucket of water at approximately 40° C. As previously noted, febrile reactions did not occur in any of these saline infusions. The infusions of blood were performed at room temperature, the refrigerated blood being warmed to that temperature. In three cases blood was taken straight from the refrigerator and immediately reinfused (as was the practice in several field transfusion units on active service) without any reaction apart from venous spasm in one case, described below.

Rate of Administration.—The saline infusions were given at a standard rate of approximately 40 ml. a minute and no reactions were observed. With blood the usual rate of administration was 20 ml. a minute, but in 24 cases a rapid infusion was given at rates varying from 80 to 110 ml. a minute. The following observations were made during these 24 rapid infusions:

Nature of Reaction	No. of Cases in which Observed
Rise in temperature	0
Flushing	9
Venous filling	9
Fullness in head	7
Shivering and feeling of cold	3
Feeling cold without shivering	3
Tingling of lips	14

These reactions were transient, and in each case passed off a few minutes after ending the infusion.

Venous Spasm

This was observed in five cases only. In three of these the intense local spasm of the vein was enough to interfere with the administration, but on the application of local heat the spasm was relieved and the infusion given without difficulty. In all five cases it seemed to be the mechanical insertion of the needle which caused the spasm. Veins which were large, obviously visible, and easily palpable suddenly became small and almost impalpable on the insertion of the needle. In one case, however, the temperature of the fluid was an additional factor causing venous spasm, and this case is described in detail.

The subject was a healthy young man with very large veins. When he had been venesected it had been noted that his large vein suddenly became small on the insertion of the needle, but the spasm rapidly passed off. On this particular occasion the blood for reinfusion, which had been stored for two days, was administered at the temperature of the refrigerator. The venepuncture of an antecubital vein was cleanly performed, but the vein immediately went into spasm. In spite of the fluid's being cold the spasm appeared to pass off and 540 ml. was given without difficulty in half an hour. The only subjective phenomenon was that he felt his arm cold, and it was observed that the skin of the upper arm was much colder on the infusion arm, although the skin of the forearm appeared equally warm on the two sides. No difference in colour was noted between the two sides. About half an hour after the end of the infusion the subject complained of "stiffness" of the upper arm used for the infusion. There was at this time full movement at the elbow, but the skin of the upper arm was intensely cold. The subject was reassured, but two hours later he reported acute stiffness of his elbow.

On examination only a few degrees of flexion at the elbow was possible and supination was limited. There was acute tenderness over the biceps, particularly over the tendon, and this was limited to the muscle. The skin was now equally warm on both arms and the brachial pulses were equal. There was no evidence of any discoloration; the vein which had been used for the infusion was still patent and there was no tenderness over it. Otherwise the subject felt perfectly well and his pulse and temperature were normal. The diameter of the upper arm was 2 in. (5 cm.) greater on the affected side than on the other. He was given a hot bath and a sedative and sent to bed. The next day his movements at the elbow were almost normal and he had only slight stiffness. The difference in diameter persisted, but there was only slight tenderness over the biceps. No abnormality of the vein was detected. Then 48 hours after the infusion he noticed a bluish discoloration over the medial aspect of his forearm. Movement at the elbow was now normal, the difference in diameter was 1½ in. (3.75 cm.), and there was no discoloration in relation to the vein used for the infusion. The vein itself was patent and there was no pain or tenderness along it. The discoloration spread along the medial aspect of the forearm, but the whole condition cleared up in a few days, the normal difference in diameter between the two arms being 1 in. (2.5 cm.).

A similar phenomenon was observed in another of the five cases of venous spasm, although in this case the reinfused blood was at room temperature. Here also it had been noted that the vein went into spasm during the collection of the blood. The venepuncture for the infusion was cleanly performed, and 100 ml. was infused without

difficulty in three minutes in spite of the fact that the vein had gone into spasm at the insertion of the needle. Then the subject complained of intense pain over the upper arm and the infusion was stopped. The subsequent course was very similar to the previous case, with restricted movement at the elbow and swelling of and intense tenderness over the biceps muscle. The discoloration did not appear until 72 hours after the infusion.

It is suggested that these two cases were not examples of extravasation of blood from faulty venepuncture, because of the apparently clean insertion of the needle, the ease of administration, the absence of pain around the site of puncture, and the long delay in the appearance of the discoloration. Rather it is suggested that there was an intense spasm of veins draining the biceps muscle, with rupture of some tributaries within the muscle. To support this we have the swelling and tenderness confined to the biceps and the delayed appearance of discoloration as the blood slowly tracked down.

Other Reactions

Thrombosis of the vein used for reinfusion occurred in only three cases. Apart from slight pain there were no other subjective features in these cases of thrombosis. There were no cases of *infection* following the venepuncture or the use of the local analgesic. Mild *sensitivity* to the "elastoplast" dressings used was seen in only one case. Air embolism never occurred, but the danger was constantly emphasized, particularly from the emptying of the transfusion bottle when using the Army overseas pattern set with its one-way air inlet.

Careful records were kept of reactions occurring during or after venesection. There were no cases of fainting either during or after the collection of blood. Out of the 324 blood collections there were only six cases which showed mild incipient and transient features of the vasovagal syndrome. These all occurred a few minutes after the blood collection had ended. There were no cases of delayed faints among the 31 subjects in whom the blood was not immediately reinfused.

Discussion

Kordenat and Smithies (1925) and Riddell (1939) state that nearly all transfusions of fresh blood were associated with a rise of temperature even though this might be symptomless. Again, Jewesbury (1941) states that a rigor occurs in about 8% of fresh blood transfusions. These febrile reactions are caused by foreign protein, dead bacteria, stale distilled water, impure chemicals, and, above all, dirty apparatus. It was shown by Lewisohn and Rosenthal (1933) that the incidence of febrile reactions was reduced from 12% to 1.2% by the scrupulous cleaning of apparatus and by using freshly distilled water. The present observations show that with fresh blood, stored blood, and crystalloid solutions febrile reactions can be reduced to almost negligible proportions provided every care is taken in the preparation of the solutions and apparatus and in the collection and storage of the blood. Whitby (1942) emphasizes the care that is necessary in the handling of stored blood in order to avoid these hazards.

Maycock and Whitby (1941) state that too fast a rate can cause a rigor, which ceases instantly if the rate is slowed. In the present observations no rigors occurred in the cases of rapid infusions, but some of the subjects receiving them felt cold and shivery. This shivering passed off almost immediately after the end of the infusion, and it should be noted that no rise of temperature was associated with the shivering. In our opinion these shivering attacks and rigors associated with rapid infusions are not true febrile reactions. In our clinical experience of true febrile transfusion reactions it has been noted that slowing the rate of administration does not abolish the shivering of a true febrile reaction. The exact nature of these non-febrile shivering attacks or rigors sometimes associated with a rapid transfusion is not clear. It is of interest to note in the present series that the three cases of shivering and the three cases of feeling cold during the rapid infusion did not show any signs of vasodilatation such as fullness in the head, flushing, or distended peripheral veins; indeed, in three of these six cases the subject became pale. Conversely, none of the subjects showing signs of vasodilatation during the rapid infusions developed a feeling of cold or shivering. It is suggested that the sudden introduction of a large volume of fluid at room temperature into the circulation produces in some subjects a compensatory vasoconstriction, with a resultant feeling of cold. In a previous observation made by one of us (Sharpey-Schafer and Wallace, 1942a, 1942b) on rapid infusions in subjects who had been venesected and then infused with serum there were no rigors or shivering attacks even in those who showed no signs of vasodilatation, although the volumes of fluid infused were much larger than in the present series. In the previous series, however, the infused fluid was warmed to body temperature, whereas in the present one it was given at room temperature.

If this explanation of these shiverings and rigors associated with rapid transfusions is the correct one it raises the practical problem of the advisability of warming transfusion fluids. It is theoretically sound to warm all transfusion fluids to body temperature, but in practice in a busy resuscitation ward this has usually proved impossible. In those cases of oligaemic shock which have developed a shivering attack or a rigor during a rapid infusion of fluid at room temperature it has been our practice to continue the rapid infusion if the level of the blood pressure demanded a rapid transfusion. Our impression has been that those suffering from oligaemic shock who had developed these shivering attacks improved dramatically with the onset of the shivering just as if there had been a stimulation of the vasomotor centre. It must be emphasized, however, that this rapid infusion of blood should be continued only if it is not a haemolytic reaction or circulatory overloading which is causing the rigor.

It was shown by Sharpey-Schafer and Wallace (1942b) that when the blood volume was reduced by a large venesection (1,000 ml.) injection of serum or saline in similar quantities at a rapid rate produced little or no change in venous pressure or other signs or symptoms of vasodilatation. In the present series, however, where the venesection was smaller and the replacement fluid was blood, some subjects did show a transient rise in venous pressure and manifestations of vasodilatation. After a large venesection in man haemodilution is slow, but in some cases there is an immediate small dilution (Stead, 1940; Wallace and Sharpey-Schafer, 1941). In a small venesection (440 ml.) this immediate dilution may be enough to restore the blood volume to its original level, and it is probable that the cases showing vasodilatation in the present series were those which had already restored their blood volumes by this rapid initial dilution.

The complete absence of faints following blood collection and the low incidence of even mild vasovagal attacks are probably explained by the type of donor with whom we were dealing. These orderlies were intensely interested in transfusion work, and most of them had volunteered for it. The whole atmosphere was friendly and reassuring, for although most of the venepunctures were performed by orderlies there was always a medical officer in attendance.

Summary

The collection of 440 ml. of blood and the reinfusion of this citrated blood were performed on 324 individuals. An infusion of 540 ml. of glucose-saline was given to 56 individuals.

Febrile reactions occurred in nine of the 324 infusions of blood, but in none of the infusions of glucose-saline. The causes of these reactions are elucidated.

Febrile reactions are no more common with stored blood than with fresh blood, provided the blood is cleanly collected and properly stored.

The effect of the temperature and the rate of administration of the infused fluid on reactions are described.

Venous spasm, thrombosis, and mild vasovagal features were observed in a few cases.

The avoidance of pyrexial reactions and the cause of rigors associated with rapid infusions are discussed.

These observations were made during the routine training of transfusion orderlies, and we thank our commanding officer, Brigadier Sir Lionel Whitby, for his great interest and help in the training of personnel in transfusion and resuscitation.

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ISO-IMMUNIZATION BY THE BLOOD FACTOR N

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It is well known that blood factors of the ABO, MN, and Rh systems are found in the erythrocytes of every human being. In contrast with the ABO system, no naturally occurring antibodies directed against the Rh factors are found in the plasma. Immune or normal M and N antibodies are very rarely observed in human sera in spite of the fact that in giving blood transfusions no account is taken of the M and N blood types of donor and recipient. From this we may conclude that the M and N factors are very weak antigens for human beings.

Allot and Holman (1947) found several irregular antibodies, including one anti-N agglutinin. The late G. L. Taylor also found normal N antibodies in one case (Callender and Race, 1946).

So far as we know, only two cases of an N immunization are described in the literature. The first was published in 1943 by Singer. It concerned a Rh-positive patient with blood type M. This patient had received a transfusion with Rh-positive N blood. After further transfusions, again with Rh-positive N blood, the patient showed a haemolytic reaction. Anti-N agglutinins were indicated in the serum. Transfusion with M blood was endured without any reaction. The second case was described in 1946 by Callender and Race. A patient suffering from lupus erythematosus diffusus displayed a great aptitude in forming various rare antibodies—so much so that some "new" blood factors were discovered by the authors. During the course of her illness, in which a number of large and small transfusions were given, anti-c (anti-Hr') and anti-N antibodies were found in the plasma. These two cases of iso-sensitization by the N antigen occurred in patients who were immunized in consequence of blood transfusions.

In recent years we have become conversant with another method of iso-sensitization—namely, with the immunization of mothers by Rh and A or B antigens of the foetus. It is now generally known that iso-antibodies formed during pregnancy are responsible for erythroblastosis foetalis. The question arises whether an antagonism in MN blood types of mother and child might be responsible for symptoms of the newborn. No cases of iso-sensitization by the N antigen in MN heterospecific pregnancies are mentioned in the literature so far. At the end of 1946 we came into contact with the following case.

Case History

A married woman, aged 33, had had her first pregnancy end in 1944 at term with the birth of a foetus maceratus. Her second, in 1945, ended at term after a long partus. A living child was born, which died, however, some hours later. From this infant no further clinical data could be obtained. In the seventh month of her third pregnancy a specimen of her blood was sent to us by Dr. Castelein, St. Elisabeth Hospital, Tilburg. It was Rh-positive and had the blood formula R_1R_2 (CDe/cDE)-A-M. In the combination CDe/cDE of rhesus elementary antigens only d is missing. Concerning the possibility of a sensitization within the Rh system, therefore, this mother theoretically should be able to form only anti-d antibodies, but this antibody could not be found in the serum at any time.

In the meantime we also received blood from the husband for examination. He also was Rh-positive and had the blood formula R_1r (CDe/cde)-O-MN. Contrary to our expectation the blood cells of the man were agglutinated by the serum of the woman. By testing a large number of A and O bloods with the serum of the mother we obtained some more positive reactions, without finding any connexion with the factor d.

With regard to the MN types, it was possible that the woman (M) had been immunized by the factor N inherited from the husband (MN)—a possibility overlooked before. Indeed, the serum of the mother was found to contain anti-N antibodies and to agglutinate only N or MN blood (Group A or O being used). We supposed the N antibodies originated from the iso-immunization during the preceding pregnancy(ies), and that both affected foetuses had inherited the N antigen from the father. Naturally this could not now be proved. If the N antibodies had made both children ill it would be expected that the subsequent child, if MN, would show symptoms. If the child turned out to be MM then it might be expected not to show symptoms.

Three months after our examination caesarean section was carried out. Blood from the umbilical cord was sent to us for examination. The child was Rh-positive and had the formula R_2r (cDE/cde)-O-M. It is certain that this child could not have suffered from the existing abnormal anti-N antibodies, which, moreover, could not be detected in his own serum. As we expected, the baby seemed to be completely normal at birth and it developed like a healthy child. We believe that the occurrence of the anti-N agglutinins in the mother's plasma must be due to sensitization by foetal agglutinogens during the first two pregnancies. Indeed, though it is remarkable that the first child was affected, we are fairly certain of the correctness of this assumption, since 10 months after the second pregnancy the agglutinin titre seemed to be rather low (<4), tending to decrease slowly but continuously during the following three months—the last three months of the third pregnancy. Also, anti-N agglutinins could not be detected in the child's plasma at the moment of birth.

Comment

The question arises whether we are entitled to impute the death of the first two children to the action of the N antibodies detected in the mother's plasma. Of course we cannot be sure. Against this suggestion is the fact that the agglutinin was active only at room or colder temperatures, but inactive at 37° C. On the other hand the possibility cannot be absolutely excluded that under such circumstances as those present *in vivo* these cold agglutinins are able to damage the erythrocytes at body temperature. In connexion with this we recall the observations of Weiner, who, by using his conglutination technique in a case of acquired haemolytic anaemia, succeeded in demonstrating auto-agglutination *in vitro* at body temperature as well as in the refrigerator. It is clear that the circumstances *in vivo* show a greater resemblance to those of the conglutination reaction than to those of the agglutination reaction. Moreover, we do not know how high the anti-N titre had been during the first two pregnancies, and we do not know if the anti-N agglutinins then present *in vitro* were active only at lower temperatures.

Summary

In the serum of a pregnant woman anti-N agglutinins have been detected. These agglutinins are considered to be immune iso-antibodies.

The possibility of these anti-N antibodies being responsible for a stillbirth as well as for the death of a child some hours after birth is discussed.

We wish to thank Dr. R. R. Race for his kindness in confirming our serological findings and for his interest in our work.

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Medical Memoranda

Rupture of the Stomach in an African Child

Rupture of the stomach in the following case was, we believe, caused by gross gastric distension due to the action of gas-forming fermentative organisms, and we consider this unusual case may be of some interest.

CASE REPORT

A 5-year-old Acholi boy was brought to Mulago Hospital at 4 p.m. on April 26, 1946, for the fifth injection (N.A.B. and bismuth) in a course of treatment for yaws. The child was examined by an assistant medical officer, who, finding a solid mobile tumour in the hypogastrium, admitted him to hospital for investigation. Food was brought by the mother and given to the child at 6 p.m. At 11 p.m. the patient complained of abdominal pain, and there was vomiting of mucus. The condition progressed during the night, and when he was seen by one of us (R. G. L.) at 8 o'clock the next morning there was considerable distension confined to the epigastric and right hypochondriac regions.

The general condition was very poor, the patient being only semi-conscious. Continuous intravenous saline was given, and laparotomy was performed at 11 a.m. The abdominal distension by that time had increased and had become generalized.

At operation the mobile abdominal tumour was found to be a spleen with a very long mesentery; there was nothing to suggest that recent displacement had occurred. The peritoneal cavity was grossly distended with gas and fluid, but there was no evidence of peritonitis. The stomach was spherical in shape and about 7 in. (17.5 cm.) in diameter. There was a tear about 3 in. (7.5 cm.) long in the posterior wall of the stomach beginning at the cardiac sphincter. From this tear large amounts of fluid and gas poured out as soon as the stomach was handled. The peritoneal and gastric contents had a very penetrating smell which, though clearly alcoholic, did not resemble any form of native beer. Closure of the tear was attempted, but the child died.

Necropsy was performed three hours after death (J. N. P. D.). In view of the history a careful search was made for evidence of trauma, but nothing was found. Relevant findings were confined to the abdomen. An enlarged spleen was lying in the right iliac fossa, its long mesentery lying across the transverse colon but below the stomach and causing congestion in the part of the pancreas which was lying underneath. The peritoneal cavity was full of gas and of a frothy grey-white fluid, like thin gruel, in which were floating solid particles of food. A curious penetrating alcoholic odour was given off. This could not be identified by anyone present, including the head African mortuary attendant—a great expert in recognizing post-mortem alcoholic odours.

The posterior wall of the stomach showed a linear tear 3 in. long that extended about 1/2 in. (1.25 cm.) into the oesophagus. The stomach otherwise was normal. It was filled with gas and liquid similar to that in the peritoneum; the fluid continued to ferment and to produce quantities of gas and ethyl alcohol from the particles of sweet potatoes which were identified in the peritoneal fluid.

Microscopically the stomach wall was normal and showed no evidence of any condition likely to lead to rupture. The peritoneal contents on culture grew a mixture of organisms, including Gram-negative cocci and bacilli. This mixture of organisms fermented a wide range of sugars and produced large quantities of gas, but unfortunately the cultures were lost and further investigation was impossible.

DISCUSSION

Close inquiry revealed that no native medicine or beer had been given to the child, and, as stated, there was no evidence of trauma. We suggest that the fermentation of the evening meal of sweet potato produced gas under such pressure as to rupture the stomach. It may be that a very slight trauma inflicted on a greatly distended stomach might have caused the rupture. Clinically it appeared clear that at 8 a.m. the distension was of gastric origin, whereas by 11 a.m. general distension had occurred following intraperitoneal rupture, and during this time the child was lying in bed. By European standards the meals taken by African children are enormous, which probably accounts for their thinner stomach walls, with presumably a greater tendency to rupture. In this case there seemed to be no reason why the gas should not have been eructated. The dependent spleen seemed to be of no concern here.

It is perhaps of interest to point out that the overdistension of the African stomach not infrequently leads to death because of the inhaling of vomitus. This was the cause of death in six cases out of 100 necropsies performed by police request on cases of sudden death not due to violence recorded at Mulago Hospital.

A further case is on record of a young male African child whose death was due to shock from rupture of a grossly over-distended stomach, the result of an enormous meal. As in the case here recorded there was no history or sign of disease or trauma.

Our thanks are due to the Director of Medical Services, Uganda, for permission to publish.

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Advances in medical knowledge are reported in an increasingly large number of publications, and it is now more difficult than ever to discover every paper published which has some bearing on a particular topic, such as leprosy. The British Empire Leprosy Relief Association, therefore, has started publishing monographs by recognized authorities covering recent advances in knowledge on various aspects of leprosy. The first monograph is a well-produced illustrated pamphlet entitled *The Lepromin Test*, by Dr. Dharmendra, and is obtainable from B.E.L.R.A., 167, Victoria Street, London, S.W.1 (price 2s. 6d.). Dr. Dharmendra considers the active principle of lepromin to be a protein antigen of the leprosy bacillus. He discusses a method for preparing lepromin standardized by the weight of dry leprosy bacilli. He then considers the results of the test in cases of leprosy, contacts, and non-contacts, and concludes that a positive reaction is an allergic phenomenon. He regards the test as of definite prognostic value in all cases of leprosy, but of little use in diagnosis or treatment.

Reviews

MEDICINE IN TRANSITION

Nursing and Nursing Education. By Agnes Gelinas, R.N. *Health Insurance in the United States.* By Nathan Sinai, Dr.P.H., O. W. Anderson, and Melvin L. Dollar. *Medical Addenda.* Related Essays on Medicine and the Changing Order. *Medicine in the Changing Order.* New York: Commonwealth Fund. London: Geoffrey Cumberlege. ($1.00 or 6s. $1.50 or 8s. 6d. $1.75 or 10s. 6d. $2.00 or 11s. 6d. respectively.)

The U.S.A. is a big country and it does big things in a big way. In 1942 the New York Academy of Medicine appointed a strong committee representing every side of opinion, medical and allied, to consider the present and future outlook of medicine. It began by defining its objectives as follows : "To be informed on the nature, quality, and direction of the economic and social changes that are taking place now and are clearly forecast for the immediate future ; to define in particular how these changes are likely to affect medicine in its various aspects ; to determine how the best elements in the science of medicine and in its services to the public may be preserved and embodied in whatever new social order may ultimately develop."

During the years that have elapsed the Committee has issued some ten volumes of monographs on every aspect of its task ; the latest are *Nursing and Nursing Education, Health Insurance in the U.S.A.*, a volume of *Medical Addenda*, and *Medicine in the Changing Order.* Owing to the exigencies of space it is necessary to confine this review to the last named, in which the Committee states its considered views on the subject of its reference. It is very frank about what it thinks are the defects in the present provision of medical care. It believes that both the public and the profession want a great extension of it in quantity and in quality. It finds public health measures—"the first steps in the evolution of good medical care"—to be very inadequate in many areas. It notes with pleasure the great increase in the number of hospitals, but judges their quality in many areas to be in great need of improvement.

There is a strong disposition in many young doctors to avoid the rural areas not only on financial grounds. The provision of good hospitals accompanied by group practice (which it strongly recommends) would be a great attraction to many young men, and it advocates their being sent in their clinical years to approved rural hospitals by arrangement between the hospitals and the medical schools.

Much attention is given to medical insurance and to the numerous experiments of a voluntary nature made in recent years. The Committee comes down heavily on the side of voluntary schemes, and hopes that more encouragement will be given to people above the lower-paid groups to enter them, since they are a better insurance risk and their presence would help to popularize and to improve the quality and status of such schemes. "Voluntary insurance," it says, "leaves the physician the play of initiative and resourcefulness and individual responsibility." The report advocates Government grants and employers' contributions on behalf of the lower-paid people "as a sound alternative to an overall programme of compulsory insurance." The schemes, it thinks, "are much safer and more adaptable than compulsory plans, the consequences of which are at best uncertain and are in any event irrevocable." "It is on a voluntary basis that the great progress of medicine has been achieved in the past, and it is thus that continuance of progress can be assured." It is rather startling to read, "We do know from European experience that even as the general level of medical practice is lowered its costs are raised."

Discussing the various methods of payment of doctors the Committee says, "Abuses are possible in all methods of payment, whether fee for service, capitation, or salary. Thus no valid statement can be made that this or that system is best *per se*. There lies the great advantage of voluntary plans as compared with compulsory : they permit wide local experimentation in working out the system best adapted to a given time and place." While there is room for differences of opinion on many of the knotty points raised in this report, there can be no doubt that the Committee has done its work ably and thoroughly and that its volumes cannot be ignored by students of medical sociology wherever they may be.

ALFRED COX.

BLOOD PROTEINS

Die Bluteiweisskörper des Menchen. By F. Wuhrmann and C. H. Wunderly. (Pp. 354; illustrated. 36 Swiss francs.) Basle: Benno Schwabe. 1947.

This book is mainly about the value of examining the blood proteins in human clinical practice. After reviewing the methods available for this type of investigation the authors present the results of the experience gained over a number of years by themselves and their colleagues on clinical material. The methods used in their investigations were : (1) the salting-out curve in strong phosphate buffers ; (2) the electrophoretic pattern ; (3) the Weltmann test ; (4) the cadmium-sulphate turbidity test, a recently developed simple clinical test ; (5) the Takata-Ara reaction ; and (6) the sedimentation rate.

The following correlations of empirical tests with the electrophoretic pattern may be noted. The Weltmann band was found to be broad when the γ-globulin was very high, and narrowed by an increased α- or β-globulin. The cadmium turbidity test was given when a high γ- or α-globulin was present and inhibited by an excess of β-globulin. The Takata-Ara reaction was given when a high β- or γ-globulin was present. The authors discuss the blood-protein reactions in various diseases of importance in practice and disturbances of the blood proteins. This part of the book is well illustrated by appropriate data, most notably by the presentation of salting-out curves and electrophoretic patterns.

The six types of reaction pattern distinguished are (1) acute inflammations ; (2) subacute and chronic inflammatory processes ; (3) diffuse liver-cell injury ; (4) the nephrotic symptom complex ; (5) γ-plasmacytoma ; (6) β-plasmacytoma. Abnormal fibrinogen values were most common in diseases involving abnormalities of blood coagulation and haemorrhagic diatheses. Disturbances of serum globulin were mostly related to malignant tumours such as leukaemia, sarcoma, carcinoma, and particularly to the plasmacytomas. They do not, however, provide a specific test for tumours, since they may occur in inflammatory processes, especially chronic forms which might be diagnosed as malignant tumours ; but they do afford an interesting basis for subdividing the plasmacytomas according to whether the γ- or β-globulin is abnormally high. The changes in serum globulins were usefully followed by electrophoretic methods in acute and chronic infections, and in these diseases, especially in phthisis, it was the α-globulin which was mainly affected. Albumin, when it was disturbed, was always lowered, and this was nearly always the cause of hypoproteinaemia.

The observations embodied in this book are both empirical and fundamental, so that they should be of interest to the research worker as well as the clinician.

D. P. CUTHBERTSON.

EXAMINING THE SURGICAL CASE

Clinical Methods in Surgery. By K. Das, M.B., F.R.C.S. (Pp. 240; 199 illustrations. Rs. 20 or 35s.) Calcutta: The City Book Company. 1947.

The student beginning his surgical work in the wards is usually given some elementary lessons in case-taking to help him in his task, but some of the printed guides which accompany the lectures are mere lists of instructions—dull and uninspiring. The author of this book states that he has tried to answer the question, "How shall I investigate this case ?" and on the whole he has answered it satisfactorily. In 41 chapters he discusses the method of examining the various conditions which the surgeon meets with, and at the end of each section he briefly, perhaps too briefly, enumerates the common causes of the condition which need differentiation. The book is very well produced and the illustrations are for the most part excellent ; in Fig. 70, however, we think one eye should be shown covered

up by one hand so that the consensual reflex may be avoided. The necessity for brevity has in some instances resulted in descriptions which may have an unexpected effect on the reader, as for example when he reads concerning duodenal ulcer, "a young man, quite busy, swallows his meals hastily at irregular intervals between cigarettes and telephone calls."

In the preface the author states that the book was composed in a fateful year during which continual disturbances prevailed in the city of Calcutta, disturbances which considerably hindered his choice of material. It is to his credit that in spite of this drawback he has succeeded in producing a book which should be of considerable assistance to the beginner in surgery.

V. ZACHARY COPE.

SPANISH-ENGLISH DICTIONARY

Spanish-English Medical Dictionary. By Maurice McElligott, F.R.C.S.I., D.P.H. (Pp. 250. 12s. 6d.) London: H. K. Lewis and Co., Ltd. 1946.

The author of this small dictionary says in the preface that he has compiled it after many years of search for the Spanish equivalents of English medical terms. It contains 14,000 Spanish words translated into their English equivalents, but there are many lacunae, more especially among the less ordinary terms. He gives no explanations or examples of how to use the words, and the dictionary therefore does not meet the need of translators. The volume might be more correctly described as a glossary and be of use in checking spelling or in conjunction with works of reference. Used alone, its adequacy as a dictionary is questionable. The author is apparently aware of these limitations, for he asks in his preface that readers inform him of any omissions they may observe so that they may be made good in future editions. He has taken every precaution to ensure the accuracy of the words listed, and the orthography of the English terms is that of the *Oxford English Dictionary*. He proposes to follow this dictionary with a companion volume of English-Spanish medical terms.

V. MCGUIRE.

IDEALISM IN ACTION

Albert Schweitzer. The Man and his Mind. By George Seaver. (Pp. 346; 30 illustrations. 18s.) London: Adam and Charles Black. 1947.

Even the irreligious and the non-musical know the name of Albert Schweitzer. Born in Alsace in 1875, he had before he was 30 acquired a European reputation in music, philosophy, and theology. An outstanding organist, he early illustrated his capacity for taking pains by becoming not only expert in the craft of organ-building but also the leading interpreter of Bach. At 30 he decided to take a medical qualification so that he might carry healing to the sick African, and the greater part of the second half of his life has been spent in Equatorial Africa working in a mission hospital built by himself. Reverence for life has been his philosophical keyword and compassion the mainspring of his action. His biographer regards him as "probably the most gifted genius of our age, as well as its most prophetic thinker."

These are large claims, and some of the interest of the biography lies in the assessment of them. One concludes that while his gifts are incomparable the quality of his thought is less striking, and his philosophic concept of reverence for life has hardly the basic comprehensiveness which he attributes to it. The truly remarkable thing about Schweitzer is his personality and the ethic that inspires it. Rarely does the artist and thinker voluntarily renounce his art and his thought for a life of action in physical discomfort and danger. If the twentieth century is hurrying to its materialist doom it cannot complain that it has lacked extraordinary and topical examples of the strength of idealism in action. The lives of Gandhi and Nansen, as well as of Schweitzer, come readily to mind. Those who read biography to enjoy the spectacle of littleness in great men (and I confess to being encouraged by even the tiniest wart on the illustrious nose) should avoid this life of Schweitzer as they would that of the Archangel Gabriel.

D. V. HUBBLE.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Dermatoses Among Gas and Tar Workers. By W. D. Jenkins, J.P., B.A., M.R.C.S., L.R.C.P. (Pp. 54. 25s.) Bristol: John Wright. 1948.

A monograph, with illustrations.

Fundamentals of Neurology. By E. Gardner, M.D. (Pp. 336. 24s.) Philadelphia and London: W. B. Saunders. 1947.

An introduction for medical students.

Textbook of Bacteriology. By T. B. Rice, A.M., M.D. 4th ed. (Pp. 603. 32s. 6d.) Philadelphia and London: W. B. Saunders. 1947.

A short textbook for medical students and practitioners.

Textbook of Surgery for Nurses. By E. S. Stafford, B.A., M.D., F.A.C.S., and D. Diller, B.A., R.N. (Pp. 577. 16s. 6d.) Philadelphia and London: W. B. Saunders. 1947.

Intended to provide general surgical information for the student nurse.

Cineplasty. By H. H. Kessler, M.D., Ph.D. (Pp. 201. 35s.) Oxford: Blackwell Scientific Publications. 1947.

An account of operative techniques, prostheses, and rehabilitation.

Osteotomy of the Long Bones. By H. Milch, M.D. (Pp. 294. 35s.) Oxford: Blackwell Scientific Publications. 1947.

A practical account of osteotomy, with many illustrations.

Sexual Behaviour in the Human Male. By A. C. Kinsey *et al.* (Pp. 804. 32s. 6d.) London: W. B. Saunders. 1948.

A compendious account of the sexual conduct of men in the U.S.A.

P-Q-R-S-T. A Guide to Electrocardiogram Interpretation. By J. E. F. Riseman, M.D., 2nd ed. (Pp. 84. 17s. 6d.) New York: The Macmillan Company. 1947.

Many diagrams of E.C.G. records and notes on interpreting their significance.

The Child's Hearing for Speech. By M. D. Sheridan, M.A., M.D., D.C.H., L.R.A.M. (Pp. 120. 10s. 6d.) London: Methuen. 1948.

An investigation into the relation between speech, hearing, and intelligence in childhood.

Principles of Medical Statistics. By A. Bradford Hill, D.Sc., Ph.D. 4th ed. (Pp. 252. 10s. 6d.) London: *The Lancet*. 1948.

A practical introduction to statistics for the medical man.

The Science and Practice of Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., F.R.C.S., F.R.S.Ed., and P. H. Mitchiner, C.B., C.B.E., T.D., M.D., M.S., F.R.C.S., D.Ch. Vols. I and II. 8th ed. (Pp. 892, vol. I; 955, vol. II. 25s. each vol.) London: J. and A. Churchill. 1948.

This well-known textbook includes new material on plastic surgery, x-ray therapy and diagnosis, anaesthesia, and venereal diseases.

Diseases of the Breast. By Sir Crisp English, K.C.M.G., F.R.C.S. (Pp. 128. 8s. 6d.) London: J. and A. Churchill. 1948.

A short account based on the author's experience.

Surgery of the Ambulatory Patient. By L. K. Ferguson, A.B., M.D., F.A.C.S. 2nd ed. (Pp. 932. 72s.) London: J. B. Lippincott. 1947.

A practical manual of minor surgery intended for house-surgeons and general practitioners.

Textbook of Endocrinology. By Hans Selye, M.D., Ph.D., D.Sc., F.R.S.Can. (Pp. 914. $10.24.) Montreal: Acta Endocrinologica. 1947.

A textbook for student and physician.

Milk Products. By W. C. Harvey, M.D., D.P.H., F.R.San.I., and H. Hill, F.R.San.I., A.M.I.S.E., F.S.I.A. 2nd ed. (Pp. 341. 30s.) London: H. K. Lewis. 1948.

A practical manual on the manufacture, composition, and examination of edible milk products.

Textbook of the Nervous System. By H. C. Elliott, M.A., Ph.D. (Pp. 384. 48s.) London: J. B. Lippincott. 1947.

An account of the anatomy of the nervous system, with many diagrams, for medical students.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY APRIL 3 1948

THE PATIENT'S RECORDS

Any efficient system of recording admissions to a hospital should clearly permit, with a minimum of trouble, the certain identification of the individual patient's documents, with all particulars of his (or her) previous entries to the same, or indeed to another, institution. Such information may be needed either for administrative reasons or to reveal the past history of the patient's illnesses and the treatment given, while at the same time it will ultimately serve the ends of research. In a brief but comprehensive conclusion to their article published on p. 632 Prof. Lancelot Hogben and his colleagues suggest that such a system should ensure: "(*a*) That a record officer in Beachy Head would assign to a commercial traveller treated for fracture in the Birmingham Accident Hospital and subsequently re-examined in Bedford the same serial number, which would identify his position in the record file of the Birmingham or Bedford institution; and he or she would hence be able to obtain therefrom information relevant to treatment with minimum effort and delay. (*b*) That all records of one and the same individual successively admitted to one and the same institution either as an in-patient or as an out-patient would be available for research in one and the same niche in its file of medical documents without recourse to a name–address admission-and-discharge register." They point out that the use of birth names may lead in any large-scale institution, and *a fortiori* in any regional organization, to insuperable difficulties—in the Birmingham United Hospital alone, for instance, there would be in 10 years some thousands of patients named Smith or Jones. This dilemma has led them to develop an ingenious system of numbering the patient from information given by him, in such a way, it is hoped, that the same number would always be allocated to the same individual whenever or wherever admitted to hospital.

Their method is based upon a punch-card system, but in small institutions could easily be used without it. The three main items of information required are merely the Christian names, surname, and date of birth of the patient, all of which would normally be required by a records department and are not likely to give rise to any suspicion of regimentation. The patient's number is then very simply determined from code lists provided on the basis of (*a*) the first Christian name (the whole name if a common one, the initial letter if less common); (*b*) the first two or three letters of the surname, except for Smith, which needs a number to itself; and (*c*) the exact date of birth. Thus the identity of Mr. Aneurin Bevan, born on November 15, 1897, can be succinctly, comprehensively, and probably uniquely comprised under the number 0509151197.

In the development of this scheme Hogben and his colleagues have worked hard to ensure an adequate allocation of code numbers to prevailing Christian and surnames. They point out that their data, taken from the Birmingham area, are not necessarily representative of the country as a whole, but as regards surnames a comparison of some interest can be made. Using their code list C, based upon a Midland telephone directory, it is possible to compute with reasonable accuracy the percentage of names that begin with an A, B, C, etc., and then to see how this distribution compares with that given by Farr for England and Wales in 1853.[1] The results are as follows:

Initial Letter of Surname	Per cent		Initial Letter of Surname	Per cent	
	Farr	Hogben		Farr	Hogben
A	3	4	M	7	6
B	11	12	N	2	2
C	8	7	P	6	6
D	5	4	R	5	4
E	2	2	S	9	8
F	3	4	T	4	4
G	5	5	W	9	9
H	9	11	I, J, O, Q	5	4
K	2	2	U, V, X, Y, Z	1	1
L	4	4			
			Total	100	99

The agreement, considering the differences in the data both in space and time, is remarkably close. There is likely to be a much greater variation with Christian names, for, of course, parents are greatly influenced by fashion. (See, for instance, *83rd Annual Report of Registrar-General for Scotland*, 1937.) There is a point here of some importance in Hogben's scheme. Some Christian names are so common that to ensure almost certain identification of a patient it is necessary to incorporate birth rank into the code. Thus George, first-born, is number 18, while George, not first-born, is 19. But if this personal information, "easily accessible to the record officer," is to be "liable to no dubiety with respect to its interpretation," a precise definition of birth rank will be essential. For example, should the inquiry relate solely to live-born children, living or dead at the time of the patient's admission? Without careful definition record officers may easily differ in their approach, in the information they elicit, and thus in their allocation of numbers to the same patient.

A less important point is that the maiden name of a married woman must be obtained and used in the coding in order that she may have the same number throughout life. The question may sound odd to the widow of 80 with two husbands on the credit side and a fractured femur on the debit; but hers, perhaps, not to reason why. A much more serious matter, to which the authors do not refer, is the date of birth. Their system is based upon "such characteristics of the individual as do not change in his or her lifetime." The date of birth fulfils the criterion, but does the patient's memory of it? It is clear from past censuses that ages are by no means always given accurately. The amount of error, with increasing education and increasing precision in the question asked, has become less with time, but at the last census in 1931 there still were obvious mis-statements. Between the ages of twenty and seventy there is a marked rise in the numbers of individuals with

[1] *16th Annual Report of the Registrar-General for England and Wales*, 1853.

ages ending in the figure 0, and, curiously, also those ending in an 8 (there appears to be a dislike of 7). Some such errors are due merely to haziness about the date of birth, others (principally, it seems, in women) to deliberate misstatements at certain "critical" ages. It may well be that a record officer will elicit better information than a census enumerator, but it is a moot point whether throughout life there will be "no dubiety" in this respect. Even in school records the entries are not infrequently found to be wrong. This is clearly a matter for inquiry—no doubt a difficult one—for it is fundamental to the coding scheme.

D.D.T. IN USE

The remarkable advantages of D.D.T. have firmly established its value as an insecticide, but it has faults which seriously limit its value if it is not used correctly. It may be useful, therefore, to list these drawbacks and discuss the ways in which they can be overcome.

D.D.T. is primarily a contact insecticide with no action at a distance. Its lethal action is slow, and though it is apparently lethal to all insects and acarines there are a few on which its action is relatively ineffective. The time needed for an insect to acquire a lethal dose from a treated surface is often longer than is commonly supposed. Also, contrary to earlier belief, insects may recover after showing slight signs of D.D.T. poisoning.[1] Reports of susceptible insects such as mosquitoes[2] and tsetse flies[3] picking up a lethal dose in 10–30 seconds relate to artificial conditions of forced contact, perhaps with abnormally favourable surfaces like impermeable glass. Where treatments are applied to the permeable plaster or brickwork surfaces usual in houses the periods of exposure needed for the acquisition of a lethal dose, as distinct from the killing times, are more of the order of an hour for mosquitoes,[4 5] twenty-four hours for bed-bugs,[6] and up to six days for the beetle pests of stored food.[7] An interesting observation is that the percentage kill of insects does not increase regularly with exposure, as would be expected.[8 9] Sometimes great increases in the period of exposure do not result in an increased kill.

Surfaces treated with D.D.T. are irritant to mosquitoes and reduce their resting time.[1] This is a serious matter in malaria control, for it has been shown that partly affected *Anopheles gambiae* may be captured escaping from treated rooms without having remained long enough to pick up a lethal dose.[10] The irritant effect probably applies to other flying insects, and where the total treated surface in a room is small they may escape death by resting for longer periods on untreated areas. This suggests that the value of the little impregnated cards which are now being sold to destroy house-flies may not be great. In spite of the physical and chemical inertness of D.D.T., residual deposits do gradually lose their effectiveness in the course of time. The rates of loss depend on the underlying surfaces, which may vary from smooth walls to the hair of animals or even collections of water. The cause of the gradual loss may be obvious or obscure, but since a prolongation of insecticidal effect is usually to be desired it is important properly to understand the factors responsible. Another difficulty is that D.D.T. is toxic to beneficial insects and to vertebrates.

The problem of danger to beneficial insects such as bees and certain parasitic and predatory forms is common to all insecticides. D.D.T., because it is more efficient than earlier insecticides, poses the question more emphatically. The toxicity of D.D.T. to vertebrates is not nearly so high as that of many insecticides which have been used for years. Furthermore, its high insecticidal value means that in practice only small concentrations need be used. A comprehensive review of the hazards was published recently.[11] A final point is that very little is yet understood about the mechanism of the action of D.D.T. This does not limit its application on empirical lines, but it must be admitted as a deficiency.

The slow lethal action of D.D.T., and the fact that contact with the insect is necessary, depend on essential qualities of D.D.T. which cannot be altered. Its lack of toxic vapour demands contact, and there seems to be no way of accelerating its lethal action to give the rapid "knock-down" produced by pyrethrum, or of increasing its powers against the relatively resistant pests. Where such matters are important it may be necessary to choose another insecticide. The lag in acquiring a lethal dose, the irritant effect, and the non-persistence of D.D.T. present a difficult problem which does not arise in the case of certain pests which are best attacked directly with immediate heavy contamination. The 10% D.D.T. dust kills human lice[12] or the fleas of domestic animals[13] or rats[14] in a short time, and the relatively short residual action (ten days or so) is still long enough to end the infestation. Other pests cannot benefit from the slow acquisition of the lethal dose or from possible irritant action, because they cannot escape from the treated surface. Thus lice are confined to impregnated underwear[15 16] and bed-bugs cannot escape from treated walls and furniture.[6] Pests which may benefit are flying insects such as house-flies, mosquitoes, tsetse flies, sandflies, etc., which only spend short periods in contact with the treated surfaces. These three problems are interconnected—all concern the relative availability of the insecticide. The D.D.T. must be left in a condition to contaminate the insect rapidly before the irritant effect becomes important, and yet must be sufficiently firmly attached to the surface to

1 Kennedy, J. S., *Bull. ent. Res.*, 1947, **37**, 593.
2 Kartman, L., and da Silveira, M., *J. econ. Ent.*, 1946, **39** 356.
3 Vanderplank, F. L., *Trans. roy. Soc. trop. Med. Hyg.*, 1947, **40**, 603.
4 Fay, R. W., *et al.*, *Publ. Hlth. Rep., Wash.*, 1947, **62**, 149.
5 MacInnes, D. G., *Bull. ent. Res.*, 1947, **38**, 123.
6 Barnes, S., ibid., 1945, **36**, 273.
7 Parkin, E. A., and Hewlett, P. S., *Ann. appl. Biol.*, 1946, **33**, 381.
8 Busvine, J. R., and Barnes, S., *Bull. ent. Res.*, 1947, **38**, 81.
9 Monro, H., *et al.*, *Soap*, 1947, **23** (8), 123.
10 Thompson, R. C. M., *Trans. roy. Soc. trop. Med. Hyg.*, 1947, **40**, 511.
11 Stammers, F. M. G., and Whitfield, F. G. S., *Bull. ent. Res.*, 1947, **38**, 1.
12 Stock, P. G., *et al.*, *Bull. Min. Hlth. Emerg. publ. Hlth. Lab. Serv.*, 1945, **4**, 238.
13 Lindquist, A. W., *et al.*, *J. econ. Ent.*, 1944, **37**, 138.
14 Ludwig, R. G., and Nicholson, H. P., *Publ Hlth. Rep., Wash.*, 1947, **62**, 77.
15 Jones, H. A., *et al.*, *J. econ. Ent.*, 1945, **38**, 207.
16 Musgrave, A. J., *Bull. ent. Res.*, 1946, **37**, 43.
17 Clapp, J. M., *et al.*, *Publ. Hlth. Rep., Wash.*, 1947, **62**, 158.
18 Ribbands, C. R., *Bull. ent. Res.*, 1947, **37**, 567.
19 Barlow, F., and Haddaway, A., ibid., 1947, **38**, 335.
20 Hackman, R. H., *J. Coun. Sci. Ind. Res.*, 1946, **19**, 77.
21 Jones, H. A., *et al.*, *Soap*, 1946, **22** (12), 155.
22 McKenny-Hughes, A. W., *Bull. Min. Hlth. Emerg. publ. Hlth. Lab. Serv.*, 1947, **6**, 129.
23 Hackman, R. H., *J. Coun. Sci. Ind. Res.*, 1947, **20**, 56.
24 Barnes, S., *Bull. ent. Res.*, 1946, **37**, 173.
25 McIntosh, A. H., *Nature*, 1946, **158**, 417.
26 Parkin, E. A., and Green, F. L., *Bull. ent. Res.*, 1947, **38**, 311.
27 Busvine, J. R., *J. Soc. chem. Ind.*, 1946, **65**, 356.
28 von Oettingen, W. F., and Sharpless, N., *J. Pharmacol. exp. Therap.*, 1946, **88**, 400.
29 Tobias, J. M., *et al.*, *J. cell. comp. Physiol.*, 1946, **28**, 159.
30 Merril, R. S., *et al.*, ibid., 1946, **28**, 465.
31 FitzHugh, O. G., and Nelson, A. A., *J. Pharmacol. exp. Therap.*, 1947, **89**, 18.

remain effective for a long time. These are difficult conditions to satisfy, and it is clear that many methods of applying D.D.T. are inefficient. With porous materials D.D.T. is absorbed away from the surface and becomes unavailable; it is therefore difficult to render such surfaces insecticidal.[6 7 9 17] A possible remedy is to apply the D.D.T. in the form of an emulsion rather than a kerosene solution,[18] or, better still, as an aqueous suspension which leaves the insecticide deposited superficially.[19] Some useful emulsion concentrates have been described.[20 21] Loss of toxicity from walls may be due perhaps to cleansing operations[22]; loss from the hides of treated cattle appears to be due mainly to them licking themselves.[23] In both cases the residual action can be prolonged to some extent by adhesive agents used with the insecticide.[3 24]

There is disagreement on the exact type of deposit required for maximum insecticidal action. Some workers have found small crystals most active,[3 6] others say that size is unimportant,[26] yet others report that the larger crystals are most toxic.[25] Again, it has been noted that D.D.T. crystals are more toxic than supersaturated solutions[26]; but in another investigation dry crystals were made more toxic by spraying with plain oil.[6]

Interesting results have also been obtained with numerous analogous compounds tested on various insects[27] and on white mice,[28] and these results may have some bearing on the problem of the mode of action of D.D.T. Progress has also been made in determining the physiological effects of D.D.T. on insect metabolism.[29 30] Finally, the most important problem in the field of vertebrate poisoning with D.D.T. is the effect of long-continued small doses. One report is already available[31] and further work is known to be in progress.

TRANSFUSION PRECAUTIONS

Since the end of the war the E.M.S. Transfusion Service in England and Wales has been continued as the National Blood Transfusion Service, and a measure of its need is the increase shown in all its activities during 1946 and 1947. To take two examples—the demands for stored blood in 1947 were greater than in 1946 by some 50,000 bottles, and the issues of dried plasma also showed a considerable increase, rising by some 10,000 bottles. In Scotland the Scottish National Blood Transfusion Association has carried on the service it set up during the war, and in Northern Ireland a transfusion service on the lines of the National Blood Transfusion Service is being established. More blood and plasma are being used now than during the war. Generally, the wider use of transfusion is commendable, for previously many patients who would have benefited were not transfused. On the other hand, blood and plasma are potentially dangerous fluids unless prepared, stored, chosen, and used with extreme care.

The relative profusion of these fluids may be dangerous if the simple but important points to be observed in their use are neglected, if the need for the often complex investigations demanded by modern knowledge of the blood groups is not realized, and if the possible harmful, and sometimes tragic, results of transfusion are not considered. Dr. J. Wallace and Mr. R. D. Richards bring out a number of these points in their article in this issue. They confirm previous observations that properly collected and refrigerated stored blood is no more productive of reactions than fresh blood. Six of the nine reactions they report are attributed to the use of long-stored sterile giving sets, an event which may occur in any blood bank unless there is close supervision and a steady turn-over. Without constant supervision stored blood itself may be overlooked in the refrigerator and used after the normal expiry period of 3–4 weeks. In fact, blood stored for much longer than this has been transfused.

The wider understanding of the implications of the Rh factor has increased the need for care in the use of blood. Intramuscular and subcutaneous injection, as well as the transfusion of Rh-positive blood to Rh-negative recipients, can cause immunization which is permanent and may have serious results. It is essential that only Rh-compatible blood be given when transfusing any female of child-bearing age or younger, and all women who have been pregnant. Ideally, in males and nulliparous females past the menopause Rh-compatible blood should also be used; at any event an Rh-compatibility test should be made if such people have previously been transfused. The simple expedient of always giving only Rh-negative blood cannot, however, be accepted as a solution of the problem, because it would be wasteful of supplies which are naturally limited and should be reserved for Rh-negative cases. Only in emergencies should the Rh grouping be omitted and Rh-negative blood used irrespective of the Rh group.

It seems established that the transfusion of plasma or serum may be followed in up to 10% of cases by the development of hepatitis, which is sometimes fatal and is indistinguishable from infective hepatitis save for its long incubation period of some 40–120 days. Two such cases have recently been reported in this *Journal*.[1 2] This risk must always be considered when the use of plasma is contemplated, and plasma should be given only when the benefits likely to accrue from the transfusion outweigh it. Until the various methods now being investigated of destroying the infective agent have been shown to be effective, or a laboratory test to detect infected plasma has been developed, the only methods of control are the withdrawal of batches of plasma shown by transmission of the disease to be infected, the preparation of plasma from small pools, and the rejection of donors with a recent history of jaundice. All plasma now being dried in England is made from pools containing not more than the plasma from 10 bottles of blood, but there is much plasma made from larger pools still in use. The prompt withdrawal of infected material will depend upon the possible association in the clinician's mind of hepatitis with transfusion of plasma, upon the reporting of such cases to the Regional Transfusion Centre, and upon the accurate recording of bottle numbers in the case notes of all patients given plasma. Too often when cases of homologous serum jaundice are reported it is found that no such record has been made.

Constant and close supervision of the use of blood and plasma is required, and in large hospitals at least there would seem to be the need for the appointment of a transfusion officer to supervise not only the administration of the blood bank provided by the Transfusion Service but also to perform the necessary and often complex tests to ensure compatibility and to make any subsequent investigations. The Regional Transfusion Centres can perform much of this work, particularly for the hospitals in their vicinity or for hospitals having no laboratory, but they cannot, even if they wished, carry out all the tests and investigations which should be made in their regions. The appointment of resident clinical pathologists in larger hospitals would seem to be the best way of solving this problem.

[1] Scott, K. B., and Tovey, G. H., *British Medical Journal*, 1948, **1**, 196.
[2] Apley, J., and Wallis, H. R. E., ibid., 197.

HUMAN CHORIONIC GONADOTROPHIN

In 1939 Astwood and Fevold[1] reported evidence which suggested that the anterior pituitary secretes three rather than two gonadotrophic factors. The first of these (FSH) stimulates the ovarian follicle to ripen, the second (LH), acting after and in conjunction with FSH, causes ovulation and initiates luteinization, whilst the third (luteotrophin) is said to be essential for the maintenance of the formed corpus luteum. As none of the pituitary hormones have been isolated, and as they are not available in adequate amounts for therapeutic purposes, various anterior-pituitary-like substances of chorionic origin are employed instead. Chief among the latter are equine serum gonadotrophin, which is follicle-stimulating, and human pregnancy urine gonadotrophin, the action of which has been the subject of controversy. In laboratory animals it is mainly luteinizing, but its effect on the human ovary is doubtful, and M. E. Davis[2] goes so far as to state that it "does not affect the human female favourably so that it is probably of no value in gynaecological therapy." This is an extreme view, but certainly human chorionic gonadotrophin when given alone has never been shown to possess the property at one time attributed to it of inducing ovulation and of initiating luteinization in woman. However, an investigation controlled by hormone assays and endometrial biopsies into the possibility of inducing ovulation in the human by a combination of follicle-stimulating hormone and chorionic gonadotrophin—the "one-two cyclic gonadotrophin therapy" of Hamblen and C. D. Davis[3]—gave promising results in a small series of cases. Other workers have failed to confirm these findings, but it is possible that the conflicting results may to some extent be due to variations in the dosage, purity, and potency of the preparations used.

Further light has now been shed on the subject by Brown and Bradbury,[4] who describe a controlled study of the physiological action of chorionic gonadotrophin in normal women. In four cases the daily injection during the secretory phase of the menstrual cycle of amounts varying between 5,000 and 20,000 international units of the hormone produced a state of pseudo-pregnancy for periods of up to 19 days. Biopsy in these cases revealed the presence of decidual changes in the endometrium; the urinary excretion of pregnanediol continued beyond the usual life-span of the corpus luteum of menstruation; and in one case a well-developed and active corpus luteum was demonstrated at laparotomy on the fourteenth day of treatment. The onset of menstruation, however, could not be delayed indefinitely in these cases, bleeding occurring during, and despite, uninterrupted treatment. No explanation is offered for this last phenomenon, but it may lie in the fact that Brown and Bradbury gave the same dose daily in each case, whereas progressively larger doses may be required to maintain luteal activity. Once menstruation had begun the injection of the hormone was without effect. A more significant finding was that in five individuals treatment during the follicular phase of the cycle did not appear to hasten ovulation or the onset of luteal function. These observations strengthen the suggestion previously made that while chorionic gonadotrophin prolongs the activity of a pre-existing and functioning corpus luteum it does not by itself induce ovulation or initiate luteal activity. This view does not necessarily confirm the theory that there are three pituitary gonadotrophins, but if there are, then chorionic gonadotrophin resembles in its action luteotrophin rather than LH. It also follows that it should be used when it is desired to enhance already established but deficient luteal activity. This is not to deny that chorionic gonadotrophin may have other uses. Thus it is sometimes of value in the treatment of metropathia haemorrhagica where there is a complete absence of luteal activity, but in such cases there is some reason to believe that it controls the bleeding not by stimulating corpus luteum function but by depressing follicular activity.

[1] *Amer. J. Physiol.*, 1939, **127**, 192.
[2] *Progress in Gynecology*, 1946, p. 203. Edited by J. V. Meigs and S. H. Sturgis. New York: Grune and Stratton.
[3] *Amer. J. Obstet. Gynec.*, 1945, **50**, 137.
[4] Ibid., 1947, **53**, 749.

THE TREATMENT OF CHOLERA

Hopes that the commoner sulphonamides or antibiotics would be active against cholera were disappointed. Bhatnagar and his colleagues,[1] however, have now produced a compound which in preliminary trials seems to have been much more effective. The first observation was that hexamethylene-tetra-amine in a 10% solution in physiological saline would kill cholera vibrios *in vitro* in less than half an hour. Crude compounds in which hexamine was linked with sulphanilamide were then prepared and in preliminary experiments gave promising results in animals and man. Later a condensation product containing two molecules of sulphathiazole and three molecules of formaldehyde was made. This compound has the formula $C_{21}H_{22}O_6N_8S_4$, but its actual constitution has not yet been worked out: for the present it is termed Compound 6257. *In vitro* bactericidal action on cholera vibrios was well marked in concentrations of 50 mg. per 10 ml., while with lesser concentrations above 5 mg. per 10 ml. there was bacteriostatic activity. The *in vitro* tests were confirmed in mice inoculated intraperitoneally with 2 M.L.D. of cholera vibrios. When mice were given 40 or 50 mg. in divided doses for two days prior to inoculation and then the same dose morning and evening for four days after inoculation there was complete protection if the drug was given subcutaneously or intraperitoneally. If given by mouth the drug saved only 10% of mice, presumably because of poor absorption from the alimentary tract.

Field trials were carried out in the Tanjore District of Southern India. The patients were for the most part undernourished women and children suffering from the effects of purgation, vomiting, and suppression of urine. A specimen of stools was first examined to establish the diagnosis, and the drug was then given in a dose of 6 g. followed 4 hours later by 4 g.—usually by mouth, though if vomiting were profuse the drug was administered per rectum. As a rule the total dosage was 28 g., of which 10 g. was given on the first day, two doses of 4 g. on the second day, and thereafter two doses of 1 g., morning and evening, for the next five days. Under this regime vomiting ceased and purgation was reduced within six hours: the urinary output was normal in about nine hours. Cholera vibrios were absent from the stools by the fifth morning.

So far 85 cases of bacteriologically proved cholera have been treated under field conditions in 27 villages, with a mortality of only 4%—in contrast to the usual mortality during the past seven years of 60%. No toxic manifestations have been seen even when as much as 50 g. has been given. Plenty of water, however, was drunk by the patients, and soda water when available. Although no details are given, it is said that the drug has been remarkably effective when administered prophylactically to contacts living in infected villages. If these results are confirmed a considerable advance in the chemotherapy of cholera has been made.

[1] Bhatnagar, S. S., Fernandes, F., De Sa, H., and Divekar, P. V., *Nature*, 1948, **161**, 395.

BITING MIDGES IN SCOTLAND

The minute black midges of the family *Ceratopogonidae* are very common in parts of Scotland during the summer months, particularly in the West Highlands, where the indignant sportsman frequently blames them for the lost salmon or the missed grouse. They do not transmit human diseases in this country, but most people who are bitten find the consequences very unpleasant. The irritation from the bite begins at once and may continue for several days; scratching aggravates it and may cause secondary infection. Nor do bites come singly: it is estimated that there are at least 50,000 active midges to the acre in areas where they are abundant. Investigations in the Trossachs at the height of the midge season (July–September) have given averages of 150 midges per person per hour. It is not surprising that agricultural work has been seriously impeded by midges in some places, and that the tourist traffic has suffered in the summer months.

A few years ago the subject of midge control was made the study of a special committee of the Scottish Department of Health. In 1946 an interim report was issued,[1] and recently a second report has appeared.[2] The most important item in the first report was the recommended use of the repellent dimethyl phthalate[3] as a protection against midge bites. Biological data were few, and existing records showed the difficulty of direct control measures. The midges belong to the genus *Culicoides*, of which fifteen species were found; most of the trouble was clearly due to one species, *C. impunctatus*.

The recently published report contains details about the methods adopted to obtain further information about the life history of the midges. A trap was made in the form of a box, and in the bottom and sides of this small glass vials were inserted. Traps of this type were inverted over likely breeding-grounds, and the emerging midges were attracted by light into the glass vials. By this means some information has been obtained about the types of breeding-sites chosen by different species. Unfortunately relatively few of the most important species were caught in the traps, so that their preferences are still uncertain. When the breeding areas are known it may be possible to render them unsuitable or unattractive by drainage or similar operations. Alternatively it may prove feasible to attack them with insecticides. In the meantime sufferers will have to rely on the DMP (dimethyl phthalate) repellent. Further trials have confirmed its value. It can be applied to the skin—various formulae are suitable, but they must contain at least 40% of the substance. Skin applications only remain effective for a few hours, but more prolonged protection is possible by using wide mesh (4/16 in. × 5/16 in.) veils impregnated with DMP. These are worn over the head and give protection without obscuring vision. If kept in a tin when not in use they remain effective for a fortnight.

[1] *Control of Midges*, 1946. Edinburgh: H.M.S.O.
[2] *Second Report on Control of Midges*, 1948. Edinburgh: H.M.S.O.
[3] *British Medical Journal*, 1945, **1**, 705.

COPENHAGEN INSTITUTE FOR HUMAN GENETICS

The foundation of an Institute for Human Genetics at the University of Copenhagen was first proposed by Prof. Oluf Thomsen in 1935. In 1938, with the help of a grant from the Rockefeller Foundation, the Institute was established, Prof. Tage Kemp being its first head. There is no doubt that had this department not existed it would have been necessary to create it in order to meet an urgent need. During the years 1929 to 1939 several eugenic laws were adopted in Denmark. These dealt with sterilization, prohibition of marriage in certain circumstances, and abortion on eugenic grounds. The laws were skilfully framed and provided ample safeguards; they might well serve as a model for study should similar measures be contemplated in this country.

In a recent account[1] given to the Eugenics Society Prof. Kemp explained the working of the system and its practical results. It is not claimed that the new laws are having any great effect on the population as a whole. The aim has been different—the humane and intelligent application of measures to the benefit of the individual patient. To quote Prof. Kemp: "It is sometimes stated that the main purpose of eugenics is to spare society a good deal of expense. This, of course, is a great mistake. Negative eugenic measures are of an entirely medical character, aiming at the prevention of disease and misfortune." The average annual number of sterilizations was less than 20 in 1929–34, rising to 280 in 1935–9, and was no more than 350 during the years 1940–5. The use of these laws and the operation of the medico-legal machinery which they set up created the demand for genetic advice, and this the University Institute has been well qualified to supply.

During its brief life the research record of the Institute has been magnificent. In some ways the war almost helped research in Denmark; at least research was not interrupted to anything like the same extent as in many other countries. The Danes had no armed forces in which to serve. So far as they could they ignored the German occupiers and for long periods could concentrate on their work. We in this country can also be grateful because, presumably to annoy the Germans, English became the standard medium of publication. Apart from one volume in Danish (with English summary), all the wartime publications of the Institute are in English. From 1941 to 1946 ten large volumes of *Opera*[2] have appeared. Two of these are bound collections of reprints; the others deal with the following subjects: Graves's disease, achondroplasia, harelip and cleft palate, gipsies in Denmark, haemophilia, pituitary dwarfism in mice, deaf-mutism, and cancer of the breast. The attempt was being made, apparently with success, to ascertain and study every case of the rarer of the above diseases in Denmark. The material is carefully analysed and the conclusions fully set out. But what is even more valuable is that the individual case histories are given in detail, so that these volumes will remain an admirable source of material for research workers for many years to come. It was only after the war was over that the *Opera* became known in this country. Accordingly we propose to deal with some of them in a series of annotations. The first, on haemophilia, will appear in a later issue.

[1] *Eugen. Rev.*, 1947, **38**, 181.
[2] *Opera ex Domo Biologicae Hereditariae Humanae Universitatis Hafniensis*, Copenhagen, Ejnar Munksgaard.

Prof. Warren H. Cole, M.D., F.A.C.S., Professor of Surgery in the University of Illinois, will deliver a Moynihan Lecture before the Royal College of Surgeons of England (Lincoln's Inn Fields, London, W.C.) to-day (Friday, April 2) at 5 p.m. His subject is "Repair of Strictures of the Common Bile Duct."

Dr. F. J. Nattrass, F.R.C.P., will deliver the Lumleian Lectures before the Royal College of Physicians of London (Pall Mall East, S.W.) on Tuesday and Thursday, April 13 and 15, at 5 p.m. His subject is "Clinical and Social Problems of Epilepsy."

MEDICAL SERVICES IN N.H.S.

Regulations governing the proposed general medical services have been issued under the title of National Health Service (General Medical and Pharmaceutical Services) Regulations. They provide for arrangements to be made by the Executive Councils with medical practitioners, the setting up of the Medical Practices Committee, and the terms of service for practitioners. They also prescribe the form of certificate to be issued by the Medical Practices Committee certifying that a transaction does not involve sale of goodwill.

Each Executive Council will furnish reports to the Medical Practices Committee before Dec. 31, 1948, and thereafter annually or more frequently if required, in order that the Committee may judge of the adequacy of the medical services in the Council's area. The Council must inform the Committee when a practitioner's name ceases to be on the medical list, because of death or any other cause, and it is empowered to advertise the vacancy in the Press or elsewhere.

If the number of applicants exceeds the number of practitioners required for vacancies notified by Executive Councils the Medical Practices Committee must consider the views expressed by the Council concerned, give any applicants an opportunity to attend before it or make written representations, and inform the successful and unsuccessful applicants of its decision. An unsuccessful applicant may appeal to the Minister, who may himself determine the appeal summarily or appoint one or more persons to hear it.

The Executive Council shall consult with the Local Medical Committee and constitute an Allocation Committee, consisting of equal numbers of persons appointed by the Council and Local Medical Committee and of a chairman. This committee will be responsible for administering the Council's "allocation scheme," by which it provides for, among other matters, the assignment of practitioners to patients and vice versa where necessary, and for placing a limit on the number of persons on a practitioner's list. This limit is normally 4,000, but when two or more partners practise together there may be 5,000 on any list provided that the average remains 4,000. A practitioner employing an assistant may take on 2,400 more patients for each assistant. The allocation scheme is subject to the approval of the Minister.

On the death of a medical practitioner (or on his name being withdrawn from the list) the Council may consult with the Local Medical Committee and appoint one or more practitioners to care for the deceased practitioner's patients. A person who no longer wishes to use the general medical services may get the Council to remove his name after 14 days. A person temporarily residing in a district who is not on a practitioner's list in that district may be accepted by a practitioner during his residence.

Distribution of Funds

The sum to be distributed for the remuneration of practitioners will be credited to the Local Executive Council, which will prepare a scheme for its distribution after consultation with the Local Medical Committee. If the two bodies fail to agree the matter will be referred to the Minister, whose determination is final. The provisions of the scheme are in any case subject to the approval of the Minister.

The first schedule of these regulations prescribes the terms of service for medical practitioners. "A practitioner is required to render to his patients all proper and necessary treatment." The scope of treatment required is that which does not involve the application of special skill or experience "of a degree or kind which general practitioners as a class cannot reasonably be expected to possess." Within these limits it includes the administration of anaesthetics and operative procedures. In the case of maternity medical services such treatment also includes antenatal supervision. In an emergency a practitioner must do whatever is best in the interest of the patient.

"A practitioner is required to attend and treat at the places, on the days, and at the hours to be arranged to the satisfaction of the Council" the patients in his care, but he may alter the time and place with the consent of the Council or, on appeal, if the Minister allows it.

"A practitioner is required to provide proper and sufficient surgery and waiting-room accommodation for his patients, having regard for the circumstances of his practice." He must allow any officer or member of the Council or Local Medical Committee to inspect his surgery or waiting-room at any reasonable time, on his receiving a written request.

A practitioner must visit a patient whose condition requires him to do so, and he must issue any certificates free of charge if they are reasonably required by the patient or required by an Act. A practitioner must prescribe for his patients on a form provided by the Council, and he is prohibited from giving the instructions "Rep. Mist."

A practitioner must keep records of the illnesses of his patients and his treatment of them in a form determined by the Minister, after consultation with an organization which in his opinion is representative of the general body of general practitioners. He must forward these records to the Executive Council when called for, and in any case within seven days of a patient's dying.

A practitioner must furnish in writing to the medical officer appointed by the Minister for the area any clinical information that he may require about a patient to whom the practitioner has issued, or declined to issue, a medical certificate. He must also allow the medical officer access at reasonable times to his surgery so that he may inspect the records, and he must answer any inquiries by the medical officer about prescriptions, certificates, or statements in any report made under the terms of service.

Partners and Assistants

A practitioner will normally treat his patients personally, but if he has a partner or an assistant one of these may treat his patients. Nevertheless the patient is entitled to require the personal services of the principal instead of the assistant's, unless professional duties or other reasonable cause prevent the principal from rendering them himself.

If the Executive Council, after consultation with the local medical committee, considers that a practitioner is not carrying out his obligations under the terms of service—owing, for example, to continued absence or disability—they may, with the consent of the Minister, notify persons on the practitioner's list that he is for the time being, in their opinion, not in a position to carry out his obligations.

The remuneration will be in accordance with the following scheme. There will be an annual payment of £300, provided that after a specified period the practitioner has a minimum number of patients specified by the scheme. There will be a capitation payment, payment in respect of temporary residents, payment for treatment given in an emergency of a patient not on that practitioner's list, a mileage payment, and payment in cases where the practitioner is required to provide the services of a second practitioner to administer an anaesthetic. Other payment will also be determined as follows. There will be an inducement payment made in areas unattractive to medical practitioners. A practitioner will receive a supervision fee for training an assistant under an arrangement approved by the Minister. Practitioners with obstetric experience will receive payment in respect of their providing maternity services. Practitioners will be paid in respect of the supply of drugs and appliances.

A report by the Liberal Party entitled *The Aged and the Nation* (8, Gayfere Street, S.W.1; 2s.) surveys the problems of old people and makes recommendations for consideration by the Party Assembly in Blackpool on April 22–24. The Report recommends improvements in pensions, housing, welfare services, homes and hostels, medical treatment and administration of the services for the care of old people. It also urges that everything possible should be done to enable older workers to continue working as long as possible after pensionable age. The Report concludes that the medical profession should be encouraged to take an interest and undertake research in preventive and remedial treatment of the diseases of old age; that the aged should be admitted into geriatric departments of general hospitals, not into chronic sick wards; that long-stay and residential annexes should be attached to general hospitals; and that senile dements should receive treatment in special wards.

DISCIPLINE IN N.H.S.

Regulations entitled National Health Service (Service Committees and Tribunal) Regulations, 1948, have been issued. They empower every Executive Council to establish medical, pharmaceutical, and dental service committees, and a joint services committee. The medical service committee consists of a chairman and six other members, of whom three will be appointed by and from the lay members of the council, and three by the local medical committee. The joint services committee will have a chairman and eight other members, of whom two will be appointed by the medical service committee from their members, and two each from the dental and pharmaceutical services committees.

The medical service committee will investigate any complaint against a medical practitioner accusing him of failure to comply with the terms of service. The person making the complaint must do so within six weeks of the event which gives rise to it, unless there are exceptional circumstances preventing his doing so, such as illness. The committee will hear the proceedings in private and will draw up a report stating the evidence and its inferences, together with a recommendation about what action, if any, should be taken. It will present the report to the Executive Council, and the Council must accept as conclusive any finding of fact contained in it.

The Executive Council will send the Minister a copy of the report and a statement of its own decision on it, which may include action in one or more of the following ways: (*a*) If the Council considers that the practitioner's conduct complained of arises from his having too many patients, it may impose a special limit on the number of persons on his list. (*b*) The Council may recover from a practitioner by deduction from his remuneration or otherwise any expenses incurred by a patient owing to a practitioner's failure to comply with the terms of service. (*c*) The Council may represent to the Minister that an amount should be withheld from a practitioner's remuneration. (*d*) The Council may represent to the Tribunal that the continued inclusion of the medical practitioner on the medical list would be prejudicial to the medical services. Any party aggrieved by such a decision is entitled to appeal to the Minister, with the exception that no appeal can lie against the decision of a Council to make representations about the continued inclusion of a practitioner on the medical list.

If the Minister considers that the appeal is unreasonable, vexatious, or frivolous he may dismiss it forthwith, but he may not do so without an oral hearing if it is against a decision of the Council to take action according to (*a*), (*b*), or (*c*). The Minister may appoint one or more officers of the Ministry of Health, or other people (not more than three), for the oral hearing. His decision is final.

Advice on Fines

A medical advisory committee will be constituted to advise the Minister in relation to withholding money from medical practitioners when the terms of service have been broken. The breaches in question include failure to visit or treat a patient whose condition so requires and failure to supply necessary drugs. The committee will consist of the Chief Medical Officer of the Ministry of Health or his deputy, two other medical practitioners in the service of the Ministry of Health, and three medical practitioners selected by the Minister in rotation from a panel.

If after an investigation the Minister considers that orders for drugs, etc., given by a medical practitioner are excessive he may refer the matter to the local medical committee. The committee will furnish the practitioner with a statement of the matters of which an explanation is required. He may submit his evidence to them in person or in writing. If the committee considers that excessive cost is being incurred it will inform the Executive Council, the practitioner, and the Minister, and may add recommendations about withholding money from the practitioner. The practitioner can appeal against the decision of the local medical committee to the Minister, and the latter will appoint not more than three people (not officers of the Ministry of Health), of whom at least one will be a medical practitioner, to hear and determine the appeal. The Minister may also adopt this procedure if he is dissatisfied with the decision of the local medical committee. Once it has been decided that excessive cost is being incurred the Minister may direct the Executive Council to withhold such sum as he thinks fit.

A similar procedure governs the investigation of alleged improper certification and record keeping. If the Minister considers that the practitioner has failed to exercise reasonable care in certification he may direct the council to withhold some amount from his remuneration.

AFTER-CARE OF MENTAL PATIENTS

Mr. Justice Birkett's Tribute

Presiding at the 68th annual meeting of the Mental After-Care Association on March 22, Dr. Henry Yellowlees, chairman of the Association, said that progress had been made in all branches of the work during the year, alike in the placing of patients in convalescent or holiday homes, the boarding-out of patients from mental hospitals, and the visits paid to patients' homes. The little community of boarded-out patients was specially deserving of sympathy. These were people not ill enough for mental hospital care, but not well or strong enough to stand the rough-and-tumble of ordinary life. The Association was doing some of its most useful service in finding suitable homes for them.

Dr. J. S. I. Skottowe, medical superintendent of Buckinghamshire County Mental Hospital, said that not all discharged mental patients wanted what was commonly known as rehabilitation; many of them just wanted to be left to go their own way in their own time, and slowly to take up the threads again. This they were able to do, by means of the Association, with the help of people who had some capacity for seeing things with the patients' eyes.

Sir Norman Birkett said that the work of a King's Bench judge was infinitely varied. He had to do with matters of dispute which covered the whole range of human feeling, and especially was this true, of course, of criminal proceedings. He had been greatly struck by the number of defendants who appeared in the criminal court of whom it had to be said on their behalf that much of their trouble and their conflict with the law had been due to mental abnormality. "When I hear, as I do hear in court, of the after-care which is available for them, I have often felt that it was one of the greatest qualities of our British people that there is no phase of social redemption or amelioration to which people will not be found ready and willing to give of their time, money, and service."

Mr. Justice Birkett recalled that at the Nuremberg trial one of the defendants was charged because he, as Minister of Health, responsible for the care and nurture of great numbers of people, had cultivated and ordered and carried out in respect of the old, the ill, and the mentally disabled, not measures of restoration or amelioration, but measures of destruction. "I could not help thinking as I sat there day after day listening to that melancholy record that whatever might be said of our own country—and critics are not lacking—at any rate there is one distinguishing feature, and that is that for those who are sick in body or mind there is a fund of compassion and pity which finds expression in societies like yours." It was not indiscriminate assistance which was afforded, but it called for the discerning mind and the qualities of insight and imagination, so that not only were material remedies applied but human sympathy given.

Delegates from Italy, Denmark, and Austria have attended a course in public health administration at Cardiff organized by the British Council with the co-operation of the Welsh National School of Medicine and the City of Cardiff Public Health Department. The visitors included Dr. G. Garaci, Permanent Under Secretary, Italian Ministry of Health. There were lectures on the National Health Service Act, the Insurance Act of 1946, health administration in a city and a county area, the health of the school child, the mother and the infant, hospital services, health clinics, midwifery, the treatment of mental and nervous disorders, laboratory services, the treatment of venereal diseases, voluntary health services, and rehabilitation centres.

Reports of Societies

NUTRITIONAL STATUS IN BRITAIN

RECENT INVESTIGATIONS

A conference on "The Results of Recent Investigations of Nutritional Status in Great Britain" was held by the Nutrition Society at the London School of Hygiene and Tropical Medicine on March 13, with Dr. J. A. Charles in the chair.

Laboratory Investigations

Prof. J. R. MARRACK described the application of biochemical methods to nutritional surveys. These methods were used in the hope of collecting data free from local and temperamental bias and expressed in terms which had the same meaning all over the world. They should not only demonstrate the existence of malnutrition but also indicate the specific faults in the diet which caused this malnutrition. Before the investigator could interpret his data with confidence, however, he must make sure that his methods could be relied upon to give trustworthy results. The need for caution was emphasized during the survey of haemoglobin levels organized in 1943 by the Medical Research Council. Although an attempt was made to secure uniformity by asking all workers to use Haldane's visual method of estimation the agreement between results was poor. Thus a difference of about 7% was found between the mean values obtained by the two workers whose results showed the least variation among themselves, while there was a difference of 14% between the highest and lowest values of the worker whose results showed the widest variation. A careful sifting of the available evidence, however, indicated that in 1943 haemoglobin levels were no lower than before the war, while between 1943 and 1945 there has probably been some improvement, particularly in pregnant women and in schoolchildren. The observation of lower haemoglobin levels in agricultural workers than in policemen or Civil Servants still presented a puzzling problem.

For vitamin C surveys most workers had used the "saturation tests" devised by L. J. Harris. According to this technique vitamin C status was measured by the rapidity with which ascorbic acid appeared in the urine after massive doses had been given under carefully standardized conditions. Harris and Olliver had established that vitamin C status varied consistently with the season. The lowest level occurred in spring, when few home-grown vegetables were available, but under normal economic circumstances the decline was arrested by plentiful imports of citrus fruits. Prof. Marrack considered that while our dietary restrictions had involved no risk of scurvy we could not be certain that health and efficiency had not suffered.

Surveys of vitamin A status by examinations of the plasma using the antimony trichloride method had at times given such inconsistent results that it was questionable how much trust could be put in them. Estimations of liver reserves post-mortem were probably more reliable, and suggested that so far as could be judged by comparison with data obtained by Moore in 1937 our vitamin A supplies had improved during the last few years. Thus in examinations of the livers of newborn babies Hoch and Marrack found much higher reserves than those reported by various workers before the war.

Laboratory methods for the estimation of the body's stores of several vitamins of the B group now seemed to be fairly trustworthy, but had not been used in any large-scale investigations. Surveys of vitamin D status by estimations of inorganic phosphates and phosphatase in plasma had also seldom been attempted, although in 1944 Graham found low values for phosphate in many Glasgow school-children. Estimations of the level of protein in the plasma could not be accepted as indicating the amount or quality of the protein available in the diet.

The first requirement for future progress was to check the reliability of biochemical methods. The second was to collect enough data in any one year to establish a "base line" against which future data could be compared. Finally it would be necessary to study for prolonged periods the health of groups of subjects about whom biochemical data had been collected, so that the clinical significance of biochemical abnormalities might be correctly appraised. It seemed too much to expect that the effects of moderate changes in the diet would be apparent within a few months.

Anthropometric and Performance Tests

Prof. J. YUDKIN agreed that the establishment of "base lines" was one of the most pressing requirements in studying the effect of dietary changes on the health of the population. He considered that the problem could not be solved by the uncoordinated efforts of a few interested workers, and reminded the society that some years ago he had advocated the setting up of a National Nutritional Council.

In the interpretation of anthropometric data another difficulty had to be faced in deciding how far subnormality in height and weight could be correlated with malnutrition. Thus a child might be small for its age either through genetic factors or through falling short of the standards of perfect health. If genetic factors were ruled out it might be difficult to decide whether malnutrition was the cause of poor health or whether more importance should be attached to body hygiene, bad housing, lack of sleep, or other disadvantages which had poverty as their common origin. Fortunately these complicating factors could be minimized by studying groups of subjects of the same social class.

Many alternative forms of anthropometric measurement had been suggested, which perhaps implied that none had given complete satisfaction. Thus "static" data might be collected by recording body measurements and weights on a single occasion. These data might be related simply to age, or various devices may be employed with the intention of emphasizing the effects of malnutrition. Sitting height, for example, might be considered to be more significant than the standing height, or the Tuxford index relating weight to height might be calculated on the assumption that malnourished subjects were lighter than well-nourished subjects of the same height. "Dynamic" data might be obtained by studying gains in height or weight over a given period, and for this purpose the Wetzel grid was useful.

Anthropometric data collected by Prof. Yudkin, mainly at Cambridge, indicated that weights and heights were slightly lower in children from families with low incomes than in children from families with higher incomes. In the same income groups children were larger in small families than in large families. Data collected by Milligan and Lewis-Faning indicated that there had been an improvement in the height and weight of infants in Glossop up to 1944 as compared with before the war.

Since the ultimate effect of malnutrition was disease it was highly desirable that clinical methods for the diagnosis of malnutrition should be devised. Apart from the recognition of gross signs little progress had been made in this direction. Thus the system used in the school medical service of recognizing four grades of nutritional status—excellent, normal, fair, and poor—had given inconsistent results when the same group of children had been examined by different doctors, or even on different occasions by the same doctor. Tests of strength by the dynamometer and other means had given encouraging results, but must obviously be used with discretion. Jokl had claimed that while well-nourished children could beat poorly nourished children at putting the shot or sprinting 100 yards, the situation was reversed in a "middle distance" race of 600 yards.

Clinical Surveys

Dr. H. M. SINCLAIR criticized methods, such as those used by the Board of Education and the Ministry of Health, in which general development, posture, and muscular strength were taken as indications of the state of nutrition at the time of examination. Physical development depended upon both genetic factors and past nutrition, and signs of current dietary deficiency were by no means confined to subjects of poor physique. A rapid examination of the subject for signs of malnutrition, as conducted by Dr. Sydenstricker during his visit to this country in 1942, was less open to error. After inquiring into the medical history of each subject the doctor should seek information on certain specific symptoms, including

change in body weight, muscle pains or cramps, sore tongue, sore eyes, rapidly failing vision, weakness or fatigue, nycturia, and diarrhoea. Information about menstruation and lactation should also be obtained if relevant. The skin, hair, nails, tongue, gums, mucous membranes, and eyes should be carefully inspected, and note should be taken of any general abnormalities such as obesity, thinness, active rickets or osteomalacia, oedema, paresis, or tenderness of the muscles. In examining large groups of subjects the use of the "Hollerith" punched card system was a great convenience.

In the interpretation of the results of clinical examinations great caution was necessary. Thus folliculosis might be caused by deficiency of vitamin C or of vitamin A, but another possible cause was shortage of soap. Denudation of the filiform papillae of the tongue was much more common in those with dentures than in those with natural teeth. In the diagnosis of malnutrition therefore it was necessary to take into consideration all information which might be gained from the dietary history, somatometric data, and biochemical estimations. It was equally essential to decide on the nature of the deficiency causing malnutrition. Nothing could be gained by attempting to grade the severity of malnutrition on a general basis; a severe case of rickets could not be compared numerically with a case involving mild deficiencies of several nutrients.

During the past several years there had been a marked increase in the rate of growth of children, although in England and the U.S.A. the adult male height had remained unchanged. It had not been shown that this increase in growth rate was necessarily advantageous; it might indeed be undesirable since the long time taken to reach maturity was characteristic of the human genus. Biochemical studies by the Oxford Nutrition Survey had indicated considerable differences in the vitamin contents of the blood plasma at different times of the year and in different parts of the country. Thus women in an Oxfordshire village examined in September, 1942, gave a mean of 0.92 mg. of ascorbic acid per 100 ml., as against 0.1 mg. for women in Accrington examined in January and February of the same year. The mean level of vitamin A in the plasma of Oxford undergraduates in November, 1943, was 132 I.U. per 100 ml., as against 64.5 I.U. for factory workers near Oxford in November, 1942.

Discussion

Dr. C. C. UNGLEY stressed the need for combining clinical and biochemical observations in the examination of patients suspected to be suffering from malnutrition, and illustrated his arguments by describing two cases in which deficiency of vitamin B_1 was diagnosed and treated. Dr. E. R. BRANSBY considered that the heights and weights of groups of children were reliable indices of their nutritional status, provided genetic factors did not interfere. He hoped that a target would be set to bring the physique of poor children up to the level of those in better economic circumstances.

Dr. M. PYKE showed diagrams, prepared by the Ministry of Food, which indicated the supplies of nutrients available in Britain during recent years. He asserted that there was no evidence of any serious deficiency. Points of interest were the seasonal variation in the supplies of vitamins C and A, which reached their lowest point in spring, and also the marked rise in the iron intake which occurred in 1945 on account of a temporary raising of the extraction rate of flour to 90%. Dr. E. H. M. MILLIGAN spoke on the value of performance tests, and considered that they should not exclude the factor of will power.

Dr. A. P. MEIKLEJOHN said that in poor families, particularly with large numbers of children, malnutrition might result from lack of time and facilities to prepare nourishing meals even when the foods were available. Dr. S. K. KON described a survey of the nutrient contents of human milk; an increase in the vitamin B_1 content had been observed which could be correlated with the introduction of flour of high extraction rate. Miss M. ANDROSS presented data comparing the food intake of students in a Glasgow hostel in 1935 and 1948. There appeared to have been a slight fall in the consumption of protein, but a surprising rise from 78 g. to 101 g. daily in the consumption of fat.

Dr. R. B. HAWES summarized the day's proceedings on behalf of his colleague Dr. H. E. MAGEE, of the Ministry of Health. He regretted that none of the speakers had provided any substantial information on the present nutritional status of the country, but had focused their attention mainly on the discussion of methods. In his opinion the severe criticism of the methods used by the Board of Education was unjustified.

Rh FACTOR

At a meeting of the Medical Society of the L.C.C. Service at County Hall on March 5, Dr. E. N. ALLOTT, of the Lewisham Group Laboratory, read a paper on the rhesus factor and blood transfusion.

There had been a great increase in blood transfusion in recent years, and a lot of transfusions, he thought, were unnecessary. Rh tests should always be done before transfusing a woman of child-bearing age. The dangers of giving Rh-positive blood to Rh-negative female patients were just as great as those of ABO incompatibility. In a large proportion of Rh-negative patients transfused with Rh-positive blood antibodies were produced.

He had records of 38 patients whose first affected pregnancy followed transfusion with blood of unknown Rh type. Of these 38 patients 26 received transfusions before 1944, when the significance of Rh groups was perhaps not sufficiently widely recognized. But 12 of the transfusions had been given since 1944, and were inexcusable. Only 4 were given for medical and surgical conditions not associated with obstetrics and gynaecology. Of the 38 patients 8 had never been pregnant or had only had one miscarriage before transfusion. Subsequently they had had 11 pregnancies: 3 children were living and the other 8 infants died or were stillborn.

In the last three years he had come across 9 reactions due to Rh-positive blood in Rh-negative patients. Two at least of the transfusions, including that in one of the two fatal cases, gave rise to no abnormal symptoms while the blood was being given, but were followed by complete urinary suppression. The others all had reactions of varying degree, followed in many by more or less complete urinary suppression. At least 6 of the 9 transfusions were unjustifiable.

Erythroblastosis Foetalis

Dr. C. A. HOLMAN, assistant pathologist at the Lewisham Group Laboratory, reading a paper on the treatment of erythroblastosis foetalis, said that it was important to recognize isoimmunization early in pregnancy and to do routine Rh tests on all pregnant women. The serum examination should be repeated regularly in all Rh-negative women and others with suspicious histories throughout the last two months of pregnancy. If this was not possible, the serum should be checked at about the thirty-fifth week. Known cases should have regular estimations of the serum titres. If there was a significant rise in the titre—and he considered a fourfold rise a danger signal—or if the infant's movements became feeble, induction of labour should be considered at once. In any case induction should be undertaken at 36 weeks, as the last month *in utero* was the most dangerous.

Cord blood should be collected from the newly born infant immediately after delivery for a direct Coombs test and a haemoglobin estimation. If the former was positive, a replacement transfusion via the umbilical vein should be proceeded with at once, using at least 1 pint (568 ml.) of compatible Rh-negative blood. This was the simplest and safest way of treating infants suffering from erythroblastosis; it prevented any gross anaemia and minimized the jaundice. It did not, however, offer any protection against kernicterus. If the Coombs test was negative, transfusion was not necessary, but the child should be watched.

Dr. Holman described the technique of replacement transfusion in detail, and pointed out that in suspicious cases everything should be ready before delivery for replacement transfusion, and the operator should be prepared to spend several hours doing the transfusion. As a result of replacement transfusion with a pint of blood about 80–90% of the infant's cells were removed and replaced by non-reacting normal adult cells. If the disease was recognized twelve hours or more after birth, when replacement transfusion by the

umbilical vein was no longer possible, it was necessary to watch the infant's haemoglobin. If this fell rapidly on the first or second day a transfusion should be arranged at once; otherwise it was advisable to wait until the haemoglobin had dropped to about 50% and then give about 250 ml. of Rh-negative blood by slow drip. A transfusion of this size would carry the infant over the period during which its initial blood cells were being destroyed and would maintain it until these had been replaced. All infants treated in this way should be followed up and given iron and ammonium citrate as required, if necessary until fully weaned.

Immediate and Delayed Jaundice

Dr. A. G. SIGNY, of St. Mary Abbots' Hospital Group Laboratory, said that cases of jaundice after transfusion might be immediate or delayed. The immediate ones were part of a more general haemolytic shock associated with destruction of the donor's cells and, very occasionally, of the recipient's cells. He recalled Mollison's report to the Medical Research Council describing the investigations which should be undertaken when such cases occurred. He pointed out that the duration of the jaundice would depend not only on the degree of haemolysis but also on the extent of the liver damage. He described the method of treatment by immediate alkalization. Discussing delayed jaundice, he reviewed many reported cases, including the series followed up by Janet Vaughan and her colleagues. He also mentioned some cases he had seen, and described the clinical, biochemical, and histological features, which were on the whole identical with those of infective hepatitis except for the longer incubation period and the severer type of disease with a longer period of recovery time and a higher proportion of deaths. He stressed the increased risks when serum or plasma was used as against those when using blood.

On the question of general prophylaxis there were many measures which were obvious, such as not using blood from donors who had recently been jaundiced or in contact with cases of jaundice. Treatment of the plasma had so far failed to remove the icterogenic agent, but he thought that the advice of Makari should be followed and that a routine flocculation test should be done on all blood donors at the same time as Wassermann and grouping tests. No blood showing any change in its colloidal gold reaction or other flocculation tests should be used for transfusion.

NEURITIS

A discussion on neuritis took place at a meeting of the Hunterian Society on March 15, with Mr. A. E. ROCHE presiding.

Dr. PHILIP ELLMAN said that neuritis was a term loosely used, a dumping ground for many things from neurosis to neuralgia, even including the shooting pains of tabes. He discussed localized forms, in particular sciatica, brachial neuritis, and the so-called costoclavicular syndrome. The principal causes of polyneuritis could be classified as infection, chemical agents, and metabolic deficiency. Fibrositis, like neuritis itself, was a term which had been applied to innumerable maladies showing a common symptomatology, but in spite of the valuable work of Copeman and others its aetiology and pathology remained obscure. In his general conclusion Dr. Ellman emphasized the dangers of surrendering judgment to the fascination of a name—dangers nowhere more apparent than in this field.

Dr. ALDREN TURNER said that neuritis in the sense of inflammation of the peripheral nerves seemed to be rapidly losing ground as an accurate diagnosis. Actual inflammation of the peripheral nerve was uncommon; in the majority of cases there appeared to be a metabolic or degenerative process at work rather than an inflammatory one. He discussed three conditions which had been "rescued" comparatively recently: (1) lateral prolapse of the intervertebral disk; (2) axillary inlet syndrome due to mechanical compression, albeit intermittent, of the nerves and great vessels as they passed through the neck to the axilla, and (3) severe pain round the shoulder, followed by a palsy. Dr. Turner described the favourable clinical results in 46 cases of prolapse of the cervical disk treated conservatively by means of rest in bed, four or five pillows behind the neck, a sling for the arm, and a mild analgesic. The third condition he had mentioned might possibly be a true neuritis. Pain was felt around the shoulder girdle and radiating down the arm, lasting for a few days or even two or three weeks, and followed by a certain amount of paresis. There was no fever or constitutional disturbance. His observations on this condition were based on 136 Army cases. He did not know the aetiology and pathology, and a suitable name was lacking. The terms "localized neuritis of the shoulder girdle," "infective neuritis," and "acute brachial neuritis" had all been used, but a non-specific name seemed to be preferable.

Surgeon's Point of View

Mr. DUDLEY BUXTON said that "martyrs to sciatica" were no longer to be found, but a considerable number of people still told their friends that they had "neuritis." He had seen patients labelled cases of neuritis when they had thrombo-angiitis obliterans. Surgical treatment should be considered when the nerves were irritated, when there was compression, and when there was tension. The costoclavicular syndrome had been dealt with surgically—an important advance was the realization that a cervical rib or a fibrous band was only part of the causation.

Dr. FRANK COOKSEY agreed that rest was the key to treatment for the relief of pain, but rest might not always be sufficient, and three further methods presented themselves, namely, heat, ultra-violet light, and ionization. He spoke in particular of the value of dark heat and moist heat. Radiant heat should be used with the lamp further away than usual, and the time of application should be short. He usually started with applications of five minutes' duration, increasing gradually. Diathermy was useful for neuralgia or neuritic pains arising from osteoarthritis of the spine.

Dr. KENNETH MCFADYEAN had heard with surprise that one of the best remedies was rest, because as a general practitioner, when sending patients to the physiotherapeutic department of a teaching hospital, he had learned from them afterwards that they had done exercises. With regard to moist heat, he wished that some people in the big hospitals would themselves learn, and teach others, how to make a really good linseed poultice.

Dr. WILFRED HARRIS, Dr. F. WRIGLEY, and Mr. DICKSON WRIGHT joined in some further discussion. Dr. W. S. C. COPEMAN said that twenty years ago, when he was registrar to the late Sir William Willcox, who was also interested in this subject, he congratulated his chief on one occasion on a very learned lecture he had given at St. Mary's, and Willcox said in reply, "Well, you know, there are a lot of cases with this sort of thing, but the cure is the same in all of them," and after his interrogator had waited expectantly, Willcox added, "Six weeks." The theory of this subject had advanced more rapidly than the therapy.

Delegates to the Scottish Council of Social Service's week-end conference in Edinburgh recently heard Mr. J. Callan Wilson, of the Department of Health for Scotland, give some reasons for the introduction of the National Health Service. Hospital organization, he said, had grown up without plan or system. Some hospitals, dealing mainly with general medicine and surgery, were voluntary and supported by subscriptions, donations, flag days, and charitable efforts of various kinds. Others, such as infectious-diseases hospitals, sanatoria for tuberculosis, and maternity hospitals, were run by local authorities. There was no cohesion; existing services were not comprehensive and there was unnecessary overlapping and competition. Moreover, the provision of special services, such as for orthopaedics, was totally inadequate. The absence of regional organization had confined the university influence and concentrated specialized skill in small groups for teaching hospitals. The increasing cost of hospital service was another factor to consider. Exchequer assistance was inevitable, therefore control by the Exchequer was unavoidable. Discussing the family doctor, Mr. Wilson said that to-day there was an organized public service providing a family doctor for only about half the population. There was no provision for the families of dependants of insured persons—a serious gap which must be bridged. Most difficult of access to people of moderate means to-day were the consultant and specialist services. The person who could pay a fee for consultant advice had no difficulty, but the person who could not afford a fee could have access to consultant and specialist advice only through the out-patient departments of the voluntary hospitals. Arrangements of this kind were not well organized at present.

Correspondence

Consultant Leadership

SIR,—Mr. Reginald Payne's contention (March 13, p. 514) that consultants were bitterly disappointed that they had received no guidance or leadership from those in high authority, who had been elected to represent them, is justifiable and unanswerable. For some reason these leaders appeared to be unwilling to commit themselves to any declared policy or public pronouncement. The long and disturbing silence going on from month to month left the consultants baffled and disunited and raised doubts and suspicions in the mind of the general practitioner. How comforting and encouraging it must have been to the Minister to feel that no breath of criticism or threat of battle need be feared from those in high representative office in the largest medical centre in the British Isles. What a contrast was provided by the declaration issued by the Royal Faculty of Physicians and Surgeons of Glasgow on March 3, 1947, which they reaffirmed on Jan. 5, 1948 (see *Journal*, Feb. 7, p. 257). There was no ambiguity in their memorandum ; it was bold and constructive, and it was crystal clear which side of the fence they were on. They rejected totalitarian dictation from a politician.

One heard of members of the staffs of some hospitals receiving payment in the interim period, and some not ; the payment, ostensibly, came from the boards of management. This is no criticism levelled at those who received it ; there had been no declared policy, and payment was said to carry no liability. Hospitals and institutions were receiving financial help to a hitherto-unheard-of extent, with the sky as the limit. We heard vaguely of large grants from the Ministry being made to representative and influential bodies. It is difficult to accept all such and then vilify the Minister ; whether they incur a liability or not is not the point at issue : their reception must exert an influence (in the interim period), and the impression was left that a rather insidious form of bribery was raising its head.

The Minister was quick to see that a wedge might be successfully driven between the consultant and the general practitioner, and he may still covet that hope. Not until 800 consultants met in London of their own free will, with no coercion from the B.M.A. or encouragement from any corporate body, and most emphatically expressed their individual refusal to work the Act as constituted—then, and then only, did the general practitioner begin to look upon the consultant as an ally. And is this suspicion entirely allayed yet ? I doubt whether it will be until an unmistakable lead is given from representative consultant authority. For the silence is still unbroken and threatens to remain so. 2,600 Fellows of the College of Surgeons may know where they stand individually ; in fact the great majority have instinctively realized the danger of investing a politician with the immense dictatorial power which this one, and possibly others, even irrespective of party, intend to assume, but do they know, or does the Minister know, where they stand collectively as a representative body ?

Is it not essential that those who are elected to high office in the near future as representing the various consultant branches have openly declared their intention of calling for the repeal of such an Act, or insisting on the deletion of all clauses which the profession cannot tolerate ? Such representatives should have no personal axe to grind and no fence to sit upon.—I am, etc.,

London, W.1. A. R. DINGLEY.

What is Professional Freedom ?

SIR,—We doctors are fighting to retain our professional freedom. If we remain clear-headed and united we are bound to win by a comfortable margin. But how many of us are clear that *professional freedom is a compound of civil and political liberties ?* A brief glance at the following quotation from C. D. Hardie's *Background to Modern Thought* (Thinker's Library, 1947), should satisfy the doubters, if there are any. (Hardie is professor of education in the University of Tasmania, not a medical man. *It is interesting to note how many of the fundamental freedoms we are determined to retain are basic to truly democratic citizenship.*)

"Under the idea of civil freedom can be listed at least the following: Freedom (1) from fear as to my personal safety; (2) from fear as to the safety of my property; (3) to move when and where I please; (4) to speak and write what I think; (5) from fear of unjust imprisonment; (6) from fear of economic insecurity; (7) to worship as I please; (8) to assemble with whom I like. Under the idea of political freedom I should be inclined to list: Freedom (1) to advocate amendment of the laws; (2) to criticize policies; (3) to vote by secret ballot; (4) to hold office in government if selected by one's fellows."

He goes on: "It is . . . quite impossible that all of these freedoms will ever be obtained." (The complete attainment of one must sometimes interfere with the complete attainment of another.) "Yet most people at most times have, with sound instinct, striven for as much as possible of each one. And here, it seems to me, we come to the chief contribution which the English-speaking peoples have made to civilization. Ever since the thirteenth century, when the foundations of both civil and political liberty were laid, the English have been in the forefront of the struggle. It is unfortunately true that they have struggled much more for themselves than for others . . . but it seems probable that they are beginning to realize that when liberty is threatened in one place it is threatened everywhere." (My immediate comment on this last observation is a very simple one. Are they ?)

It is up to us doctors, then, to get the people to see—so far as they can be got to see—that the present threat to *our* freedom is also a threat to *theirs*. But even if we fail in this, we still know we are right ; and by simply standing firm we can win—without the public's support. In this contest, of such vital importance to the whole country, what truly lucky people they—and we—are !—I am, etc.,

Glasgow. J. INGLIS CAMERON.

A Phoenix Act Needed

SIR,—Touching general practice, the French "Assurances Sociales" scheme is ably outlined by Dr. J. Delafresnaye (March 13, p. 519). After spending some two months in its study I was convinced that it functions no less smoothly as regards hospital and consultant services.

I am given to understand that New Zealand has operated for many years past a fundamentally similar scheme. A comparative study would be illuminating, for the Dominion appears—from many critical accounts—to have failed lamentably where France has succeeded so well—i.e., to promote specialization, postgraduate study, and research.

I cannot speak with knowledge of New Zealand's alleged failure, but am sure that France's admitted success is due to the fact that:

(1) Its basic motive was a genuine desire to promote health. *Incredibile dictu* for a Government-sponsored scheme, its inception was unconnected with political theories and intrigue. (The advance of Communism in the country can be fully explained without praying in aid hospitals or doctors. The latter are *not* State-controlled: they are in full possession of their liberties.)

(2) The doctor-patient relationship is secret, inviolable, indeed unaffected. The "complicated administrative machine" of which Dr. Delafresnaye speaks is a lay accountancy which minds its own business and conducts it well. It is not unduly expensive.

(3) The 20% deduction just happily suffices to prevent abuse of the system by patient or doctor without penalizing the sick. A very poor or chronically ill patient might find his 20% contribution a burden: public funds from other sources can deal with such a totally exceptional case. *Everyone is 20% a private patient*—at once a status and a delicate tribute to private enterprise. As far as the doctor is concerned, he is 100% private.

I have long hoped we may eventually devise a counterpart which need not slavishly follow either France or New Zealand, and that is why I want to know where New Zealand went wrong. I suspect she concentrated too much on the G.P., just as we did in 1911, forgetting that the G.P. is nothing without his specialized colleagues or they without him, or either without a hospital.

The scheme of 1911 was a century behind the times even then. It is something "to provide the breadwinner with a doctor," but not much when you reflect that the breadwinner is on the whole the least expensive member of the family in regard to medical services, and the "doctor" usually a consultant—now a squad of consultants where the illness is of the more disabling type, physically or financially speaking.

I admit the employment of women and the later extensions to N.H.I. have tended to enhance its value (so, very greatly, have the dental benefits, where the French "20% principle" seems to be recognized but less equitably applied). But on the whole I am sure that N.H.I. has failed wretchedly. On a hundred counts it could be indicted apart from a tendency to laxity in certification. I am sure the Government tacitly admit its failure and that the N.H.S. has been devised in great part to abolish the panel without loss of face.

If that view is correct, we are likely to be confronted with a health service that possesses none of the advantages of the French plan and may be a thousand times worse than the New Zealand scheme. Meanwhile the abolition of the panel is a moral triumph (I wish I could see how it will work out in practice) for the opponents of Lloyd George's Act 37 years ago. The majority of the medical profession in 1911 said it would not work, and, while they had to endure it for a season, they proved right in the long run. It remains for those of us who oppose the Act of 1948 to do even better—not to submit to its yoke even for 37 minutes.

I have never understood the eternal moan, "We gave way in 1911—we shall do it again." It is a parrot's repetition and it is false. The death of the panel is a colossal triumph: we can create a new entity phœnix-like from the ashes, but we shall have to nip in pretty smartly on July 5, 1948.—I am, etc.,

Stratford-on-Avon. PETER PARRY.

The New Despotism

SIR,—In following the correspondence arising out of the controversy over the proposed N.H.S. I have been struck by the failure, if not to appreciate certain points, at least to stress them adequately. As I see it, the first point is that the Ministry concerned not only will not give way but *cannot* give way on any essential point, and this for a simple reason which should be obvious to all and which, briefly, is this: the Government is *not* primarily after the doctor but after the working man, and we are but an unfortunate small obstacle on the way.

The Government has made itself responsible for all treatment and maintenance thereof and for the payment of all sick and compensation benefits. Under the Act as it stands the costs of treatment maintenance and the payments of benefits, if made on anything like a fair basis, will manifestly bankrupt the Ministry in a very short time, and the Treasury will see to it that this does not happen. It is time that someone put the thing into plain language: we all know that the collection of publicly allocated money by potential beneficiaries can be (and occasionally has been) something of a ramp. We know equally that it is a matter of the most extreme difficulty to devise methods of safeguarding such funds which are not readily capable of the most deadly abuse. We know as well (we are even told so by the Government) that there is too much absenteeism. We are told also *that the Minister must obtain control of certification.* I submit that there can be no one who is such an imbecile as not to know perfectly well just what this means. Let us then have it in good plain English and without ambiguity: the Government's real intention is to keep the working man at work to the maximum possible extent and to deny him absence benefits except in those cases in which denial will be obviously impossible or blatantly scandalous. Anything else on the arithmetic of the Act means a scheme bankrupt before it is well started. There can be no other explanation for the implacable attitudes of all the Ministers who have been concerned, for the denial to us of the most elementary rights of conscience, and for the revival of what promises to be a very good parallel to the Star Chamber.

The most striking thing about this proposed abrogation of civil rights is that it is not political in the "party" sense. The Government, for reasons obvious to the point of blatancy, is making a party stunt of the present struggle, but there seems to be no one to point out the vital fact that this measure is *not* a party matter. It was worked out and sponsored by another party, and one of our most unimpeachable legal authorities (Hewart) has warned us of the implications of this kind of legislation.

Another fact has become clear, I think, to all, and let us make no mistake about the matter. The Government will use every means in its power to crush us and to make us instruments of its oppression. It is not so long ago, even in England, that free men have lost their all for the freedom of their consciences. Let us remember, too, that a government bent on oppression can very soon create powerful instruments for its purpose should the occasion arise and we need not look very far back into our history to find illuminating examples. Contemporary examples abroad need no stressing.

What, then, are we to do? I suggest that, whatever the cost, there is but one course open to us and that is resistance to the uttermost. To do anything else is to become something unnamable and to stink in the nostrils of every decent civilized man along with those who knuckled under to Laud, Jeffreys, Hitler, and their kind—past and present.

Our weapons are as obvious as they are potent. First let us realize that, if all of the enormous majority of us who are against it refuse to work the Act and are but consistent, not only do we win but we take from our opponents one of their most powerful weapons, because we make it impossible for creditors to foreclose on us to recover payments temporarily suspended (the creditor cannot realize on the security—i.e., the practice—because there is no purchaser). The one obvious possible purchaser *can be barred in the interests of the creditors* by a very simple manœuvre. We can, if we go about it the right way, and keep an eye on certain possible eventualities which will be well known to our legal advisers, lead these interests to give us their very powerful backing for their own sakes. Secondly, and most important of all, if we can force on to the realization of the working man that this Act goes far beyond any consideration of mere party politics and is directed primarily and principally against him, the battle is automatically won. These men through their political machinery and directly can, by their voting power, turn this Government any way they like.

A simple, brief, and trenchant statement of the threat to them and, indeed, to everyone should turn the scale easily enough. It must be brief, it must be simple, and above all it must be put in good, plain, hard-hitting English. There is no time to be lost. I may add that, as I have no practice, I am interested solely as a question of freedom and liberty, but, nevertheless, like all those in my position who voted "against," am none the less interested.—I am, etc.,

Sunderland. A. KEFALAS.

Way of Freedom

SIR,—Persons may be divided into two classes: (*a*) dictators and would-be dictators whose chief ambition is to attain increasing power over other persons and whose highest good is freedom without responsibility, and (*b*) those who are *not* so minded. The latter have their choice of two policies: either (1) spoon-feeding on condition that they accept the domination of men of dictator mind, or (2) freedom to act, to choose, or to refuse with the attendant responsibilities.

Great numbers of persons are now choosing to be spoon-fed. They are attracted by the proposition of everything being made safe for them from the cradle to the grave. This is assured to them so long as they lick and stick the required stamps and do exactly as they are told. All they want of freedom is freedom to choose the apparently easy way.

As the plebiscite figures show, doctors, by an overwhelming majority, have rejected spoon-feeding and have chosen the way of freedom and its responsibilities. They recognize that men are by nature free, and that in defending their freedom they are defending their life. That is the policy of those who solemnly and honestly have voted with the majority. We have put our hand to the plough. For us in truth there can be no looking back—not even in the presence of what looks like defeat, if this should come. We have stated where we want to go. We now want leadership, and we are looking to the executive of the Association for guidance to the best means to attain our objective. It is for this purpose that we are associated. If at this crucial moment the executive fail to give the leadership which the situation demands, or if, leadership being given, the members fail to follow, the fruits of association must inevitably be lost and the Association as a whole correspondingly discredited.

Finally, if there are those who are still undecided, one would say to such: "Either choose now to join the fight for the preservation of our traditional liberties or separate yourselves from those who have made this choice and attach yourselves openly to whichever section you belong—the dictators or the material upon which the dictators work, namely, the spoon-fed masses."—I am, etc.,

Bexley, Kent. E. U. MACWILLIAM.

Safeguarding Private Practice

SIR,—It was a pleasure to read Dr. W. Reginald Wilson's letter (March 20, p. 565). It should cheer him to know that the principle that "there should be no penalty to either doctor or patient who remains outside the National Health Service" was carried with very little opposition at the S.R.M. on March 17. For the sake of those who are not aware of all the motions that have been passed by the Representative Body I would point out to my colleagues who are in doubt as to the B.M.A.'s policy that the representatives only gave way on the 100% issue (after the discussions with Mr. Willink) provided that "any member of the community, whatever his income, should be entitled to obtain his medical service in part or in whole privately, as, for example, by grant-in-aid provision" (S.R.M., 1945). Further motions supporting "contracting-out" were passed at the A.R.M., July, 1945.

In May, 1946, the Council, in its report on the N.H.S. Bill, stated: "The freedom of the citizen requires not only that he should be free to obtain his medical care privately, but that the arrangements should be such as not to penalize him or his doctor if he does." In July, 1946, the A.R.M. passed a further motion urging that the financial and administrative arrangements should be such that neither doctor nor patient should be penalized if he chooses to remain outside the national service. This *is* the policy of the B.M.A., and it is of the utmost importance that there should be an absolute refusal to yield on this vital issue.

The representatives have continually reiterated their request that private practice should be effectively safeguarded. Should it be found that after all it is not possible to give effective safeguards to prevent a State monopoly, then it is time we reverted to the policy that: "There is no need for the State to provide a service for those willing and able to provide it for themselves." Perhaps this is what the Representative Body meant when on March 17 it passed the motion instructing the Council, in the event of a deadlock with the Government, to draw up and submit to the profession an alternative scheme based on the 1944 A.R.M. motion by Marylebone.—I am, etc.,

Dorking, Surrey. CYRIL E. BEARE.

Ownership of Goodwill

SIR,—You have published so many excellent letters that most of the ground is covered and one can only underline what others have said and what you have said in your leading articles.

The letter from Dr. R. Preston Hendry headed "The Minister's Confusion" (March 20, p. 561) is most forceful, and I heartily agree that it is a most pernicious lie to say the "patients are bought and sold." Such a statement can hardly be made in ignorance—although it would seem that the opposition as well as the public are inclined to agree.

The hardship of buying a practice or partnership has been grossly exaggerated. Surely it is the easiest and safest way for a young man to begin practice. At two years' purchase he gets a 50% return for the money invested and he still has his practice, which he can sell again when he so desires, and at a higher price if he has improved it—a point which is so often forgotten.

As your correspondent points out, the right to buy and sell should be firmly retained because it solves so many other problems and is therefore a corner-stone in our opposition to the Act—freedom is thereby retained, and this is the only way this priceless principle can be retained. Indeed, it might be said that this right to buy and sell, if granted, would almost make the Act acceptable to us and workable. On the other hand, if we lose this right it is difficult to see how we can avoid a full-time State service.

How about concentrating on this one point? Let us now say to the Minister, "If you are prepared to grant this privilege, then we are ready to discuss and do our best to adjust the other points in dispute and all join in on July 5."

Finally, Sir, I think Dr. Wm. A. MacIlrath's little letter (p. 565) contains an excellent suggestion that local doctors who feel they must enter the Service on July 5 should agree not to accept other doctors' patients who do not enter the service. This, I think, would be a very fine expression of good faith between us. It would relieve and strengthen the timid and would weaken very little our stand against the Act as it is at present.—I am, etc.,

Chigwell. N. BEATTIE.

SIR,—It has been insisted that retention of the ownership of the goodwill of a practice is essential to the freedom of the doctor. No one has explained how this works out. "Ownership" of one's practice will not prevent any interference with liberty, such as the imposition of regulations as to (*a*) the use or non-use of drugs and methods of treatment, (*b*) certification, (c) limitation of lists (and so, indirectly, interference with free choice of doctor), and lastly (*d*) the requirement to complete a mass of unnecessary forms. The fact is that, once the principle of a State medical service has been admitted, as it has by the B.M.A., then the pass has been sold. No safeguards will prevent the abuses just mentioned.

If the principle of compensation is not admitted the cash value of a practice will certainly disappear. What young man will buy a practice with the probability or certainty that then or in the future it will be made easy to start in practice without the expenditure of any capital?

If these are not valid arguments, I would welcome reasons why they are not. If they are, what is the point of objecting to the abolition of the purchase and sale of goodwill?—I am, etc.,

Binfield, Berks. L. G. JACOB.

Doctors Who Might

SIR,—I have not so far attempted to enter the present controversy. I do, however, resent the stigmatization as a fifth columnist by one Lieut.-Col. J. T. Harold (March 13, p. 518). It did not fall to my lot to have to leave a practice. It did seem to me to be rather a noble act for a man to leave so personal an undertaking as a practice, especially a single-handed one, as so many young and not-so-young doctors did during the war. I met many whose quarterly cheques dwindled to nothing as their practices continued to be "protected." I wonder whether Lieut.-Col. Harold experienced what these men felt. I believe that there are now about 5,000 ex-Service doctors with higher qualifications for whom there is little prospect of work outside the new Service, apart from a series of registrarships. Perhaps Lieut.-Col. Harold would counsel these young men as to how they can face the problems of supporting a family and pay off life-assurance policies if they do not join the Service. At between 30 and 40 one cannot afford to accept £400-a-year appointments.

I have ten years' experience of a State service and I think it can work if a few points are observed. (*a*) Clinical freedom. This must include freedom from lay interference. Actually, it has been my experience that the standard of assistance in administrative affairs received from non-medical sources was often far superior to that to be expected from medical officers of "the administrative grade." The latter are often without more than minimal professional knowledge, but are able by its possession to sway potentially helpful lay authority. Lack of professional knowledge is balanced by the high rank often held. This will be confirmed by many ex-Service officers. I have often known the local (non-medical) commander care far more about the hospital than his medical counterpart. (*b*) Absence of intimidation of the professional cadre by the "office boys." The "punitive posting," familiar to us all, must not be available as a weapon to silence criticism. (*c*) The first loyalty must be to the patient. In this there will be no difficulty so far as I can see. I have sat on about 5,000 Boards and I have never seen a patient denied the benefit of the doubt. In these Boards, however, two of the three members were clinicians, and bureaucracy had no say.—I am, etc.,

Hoylake, Cheshire. T. DENNESS.

An Interim Plan

SIR,—The plebiscite has established clearly the determination of the medical profession to resist the National Health Service Act in its present form. The public utterances of Government spokesmen seem to indicate the Government's determination to impose it. The question which therefore becomes urgent is what action the general practitioner should take on the appointed day if fresh negotiations prove impracticable and we are obliged to refuse service.

The issue of the battle, if unhappily a battle is to be, would seem to depend upon our ability to find a substitute for the panel system to tide over the period between the termination of the present panel service and the settlement of the dispute. The characteristic feature of panel practice is the large attendance at surgeries. If we attempt to charge full private rates to these people, very many will stay at home or seek attention from one of the few practitioners who take service under the Act. In this way we might suffer a severe falling off of income and seriously antagonize the public. If, however, they are charged a very small fee they will probably continue to attend in considerable numbers. The practitioner will thus retain his connexion, the large turnover of small fees will provide him with an income which will at least partially compensate him for the loss of his panel cheque, and this will enable him to carry on without becoming a charge on the fighting fund.

A large notice in the waiting-room to the effect that the practitioner, while feeling obliged on principle to refuse service till the Act was amended, would attend his old panel patients at, say, half his normal private fees till the dispute was settled, might be very good propaganda. Finally, if when a patient presents a card or form for acceptance as a State patient his form or card were accepted, signed, and endorsed "subject to an equitable settlement of the dispute," or some such phrase, accompanied by a verbal promise that he should be taken on as a State patient when the matter was finally settled, it would have a better moral effect than simply turning the patient away with his form or card unsigned.—I am, etc.,

Kingston-on-Thames. F. B. LAKE.

Committee of Those Who Accept

SIR,—The time has now arrived for the minority in the profession to consider its action. The B.M.A., I am pleased to see, are the first to state categorically that the N.H.S. Act allows complete freedom of choice as to entry into the new Service or not. I, like a few thousand others, although quite able to vote against the Act in its *present form*, do feel justified in accepting service under the Act.

Only three months remain in which to thrash out hundreds of minor details necessary to the smooth running of the Act. With the B.M.A. Council pledged by the S.R.M. not to negotiate with the Minister unless certain conditions are fulfilled, we are left with no one to discuss with the Minister these vital details, found by experience to be detrimental in the N.H.I. service, which could quite easily at the present time be corrected in the regulations for the new Act.

It would of course be quite impossible for members of the present Negotiating Committee to stand out against the Act on the one hand and to negotiate for the Act on the other. In view of this difficulty I would suggest that the B.M.A. form a separate committee of those practitioners who are going to accept service, together with three clerks to committees of the present N.H.I. service. With this body to represent those willing to take part in the Service, at least some order and intelligent planning of regulations would result.

If no such committee is formed then all the regulations will emanate from the Ministry of Health, which cannot have any practical experience in running insurance practices. The final Act, even with amendments in accordance with the B.M.A. policy, would still show a mass of poor regulations, which after the appointed day would be very difficult to change or modify.

As far as I am concerned—and I am sure that I speak for the vast majority of those that will take part in the Service—there need be no fear on the part of those doctors who stay out that any of their patients will be accepted on the State lists, at least for a full three months after July 5. After that date, as it is quite clear to everyone that a doctor can either enter the Service or not of his own free will, there will be no need for the N.H.S. doctors to consider from whom any patient applying for treatment may have come.

I would just like to add one word about the lot of the assistant. All those doctors not taking part in the Service will hardly be in a position to find the money to pay their assistants at the rate of £700 per annum. I suppose all these hard-working young men will find themselves out of a job on or about Aug. 1 of this year.—I am, etc.,

Christchurch, Hants. EDWARD F. HUNT.

The Junior Partner

SIR,—July 5 will present me with a problem which I think must also face some other doctors in partnership. I should be interested to hear how they propose to solve this problem. I am junior partner to a doctor who is willing to come into the new scheme on the appointed day. I have expressed my willingness to abide by the majority decision. I am in considerable debt to my senior partner, as he has been very generous and helpful to me and I am still really only doing the work which before the partnership I did as his assistant—that is, I have so far by my admission to partnership done little to increase the size of the practice.

On July 5 all our present patients, private and insured, will sign on with my partner. What do I do? There seem to be two possible courses: (*a*) Dissolve the partnership and practice in an entirely new locality. This amounts to starting again, and with present commitments is a financial impossibility. (*b*) Revoke my decision and continue to work with my partner.

It is understood that there is no difference of opinion between myself and my partner, that I respect his decision, and that I have a moral obligation to continue to help him. Others may have a legal obligation to continue their partnerships until purchase is complete.—I am, etc.,

JUNIOR PARTNER.

Informing the Public

SIR,—Some Labour M.P.s are giving public lectures on the new National Health Service. They are emphasizing only the advantages of the scheme. They are also convincing the public that the doctors will join the scheme as they did in 1911. To achieve success it is essential that the whole profession pull their weight. I therefore suggest a few methods by which the rank and file of the profession can help.

(1) Every local B.M.A. Branch should arrange for a doctor to give public lectures on why the doctors disapprove of the new National Health Act. In these lectures stress must be laid on how the Act will adversely affect the patients. The following are examples of this: (*a*) The Service will be of a utility nature and not nearly the best that the profession can provide. (*b*) Criticism by those who understand (the doctors and nurses) how the scheme could be improved will die. Who can afford to criticize his master? (*c*) Direction of doctors must lead to direction of patients in their choice of doctor, specialist, and hospital. (*d*) Patients' medical records will be inspected by Government officials. (*e*) Patients will be forced in many cases to obey the doctor's recommendations—e.g., operations, etc.—in order to qualify for benefits. (*f*) Doctors will be forced to give certificates according to the orders of the Government. (*g*) The personal loyalty of the doctor will move from the patient to the State. (*h*) Medical appointments to practices and hospitals are bound to be influenced by the political outlook of the doctor rather than only by his professional ability. (*i*) The annual financial deficit of about £150 million in the cost of running the scheme. This must eventually entail new taxes or the weekly payment by patients must be vastly increased.

(2) In addition every doctor should be in possession of copies of a printed pamphlet entitled "Why the Doctors Disapprove of the New National Health Act." They should distribute these among their patients. Doctors like myself who have no civil patients would gladly distribute them at random among the population.

Finally, we must never forget that modern history has proved that unopposed propaganda can enslave a nation.—I am, etc.,

SERVICE PRACTITIONER.

Continuity of Practice

SIR,—The more the Health Service is argued the more one appreciates what a two-edged weapon is the phrase "comprehensive medical service available to all," and the greater grows one's apprehension lest all the principles put together prove insufficient to avert the bureaucratization of medicine, which has been and which should always remain the most free and individual of the sciences. Lord Horder's dictum that the Negotiating Body had cut concession to the bone is more likely to be an under- than an over-statement. In these circumstances it is remarkable that some doctors should have apparently so little vision of the future as to believe that the

rescission of the basic salary will be sufficient in itself to maintain essential freedom. While this proviso may perhaps provide escape from the State salaried service in name and title it is very far from doing so in effect and in fact, as these innocents would very quickly find if the Government became the sole owner and patron of their practices—which Heaven forbid. It is by no means appreciated how great is the value to the public of continuity of practice. A doctor who buys a general practice purchases, as it were, a stake in the locality. Almost invariably he settles down for a term of years, and not infrequently for the whole of his working life. In the way that only time can give he gains a real knowledge of his patients, their characters, their interests, their antecedents, indeed almost everything about them. To him they are individuals, not numbers. Frequently and in a very real sense he is a father of his people. In due course he may be succeeded by his son.

Now consider what might well happen under Government patronage, the doctor being appointed to his living. There is no incentive to like the place or to care for the people, there is no incentive to remain, and indeed much inducement to keep moving. Thus he becomes no more than a temporary resident, or, more aptly, the equivalent of the political "carpet-bagger."

Those who are wavering or weak in the faith, and those who are casting anxious eyes at their compensation, should try to look into the future of ten, twenty, or thirty years hence, when their sons and successors will be practising, and should always remember that they themselves are but custodians, that the science of medicine is a heritage common to the past, the present, and the future. It is worth hazard or sacrifice, especially of personal position and amenity, if thereby that heritage can be passed on in all the greatness of freedom.—I am, etc.,

Wirksworth, Derby. E. D. BROSTER.

Economy of Service

SIR,—If the available number of doctors is ever to deal with any contract covering the whole population great economy will have to be observed in the use of each doctor's time. It is not economic to use his time writing, dispensing, waiting for clinical laboratory services, *x*-ray services, and hospital beds. How reduce or eliminate these wastages? (1) Provide a shorthand typist for each doctor. (2) Provide a 24-hour 7-day dispensing service for the whole country. (3) Provide a "mobile" clinical laboratory service for the whole country. (4) Provide a "mobile" *x*-ray service for the whole country. (5) Provide a "mobile" consultant service for the whole country. (6) Provide *at once* sufficient hospital beds. (7) Establish a "*one only* incapacity certificate a week" service.

If (3), (4), and (5) are "mobilized" much work now absorbing hospital beds would be done at the patient's home, interesting cases would not be so entirely removed out of the care of their own doctor—to the advantage of both—so that this "mobilization" would have the effect *at once* of providing more hospital beds complete with staff. Such a development of the panel is a natural growth, and would work under the same sort of contract we have become accustomed to. The Spens Report covers the remuneration.

It would give the doctor the tools, leave him free, leave him subject to competition, and leave him responsible to his patient and his conscience.—I am, etc.,

Market Rasen, Lincs. DUDLEY F. TORRENS.

Benefits for Doctors' Wives

SIR,—I should like the opportunity of replying to the letter from Mrs. Gladys M. Woolf (March 13, p. 520). She is indeed more fortunate than most doctors' wives in that she has had a maid throughout the war. We have received many hundreds of letters from doctors' wives enclosing their subscriptions to the League of Doctors' Wives, and the gist of most of them is that the only time they are able to leave their homes to do any shopping is whilst their husbands are working in the surgery, because they have had no domestic help.

The doctors' wives are quite distraught at the thought of what is to happen on July 5 when the number of patients actually attending the doctors' houses will probably be trebled. In addition to this there will be all the extra paper work which will have to be seen to by the doctor or his wife. There will be record-cards for every patient on which every item of service—even if it is only a repeat medicine or a certificate—will have to be entered. The doctors' wives feel that this burden is too great for either their husbands or themselves after the long exhausting years of the war. There is little opportunity for these women to leave their homes with their husbands on social visits in the car as Mrs. Woolf suggests, because the house cannot be left unattended. We insist that the Minister should have made some provision in his Act for the essential domestic and secretarial help which this scheme will necessitate. —I am, etc.,

Camberley, Surrey. IRENE HARTLEY, President, League of Doctors' Wives.

SIR,—It is with some regret that I write to dispel a little of the sunny light of favouritism in which Mrs. Gladys M. Woolf (March 13, p. 520) imagines that she, as a doctor's wife, is basking.

(*a*) The practice of medicine being considered an essential occupation during the war period, maids of military age were allowed to remain in the employ of doctors because their services were considered necessary for the efficient carrying on of those practices and not out of compliment to the doctors' wives.

(*b*) Income-tax allowances are granted to all professional or business men whose professional or business activities involve them in unavoidable overhead expenses. Since this perfectly fair concession is made to any person entitled to claim it, precisely why it should now be regarded as designed for the particular benefit of the doctor's wife entirely escapes me.

(*c*) Doctors have been permitted to use their cars for recreational purposes, as they occupy the surely unique position of always being liable to recall, thus giving the frailest possible guarantee of their being able to enjoy any leisure time and certainly not with that feeling of absolute freedom with which other sections of the community are blessed.

What a pity it is that Mrs. Woolf is unable to secure for us in the heart of the Minister of Health the "soft spot" which she appears to think exists in those of the Ministers of Labour, Fuel and Power, and the Commissioner for Inland Revenue. All our troubles would then indeed be over.—I am, etc.,

Hayes End, Middlesex. MARGARET ELMES.

Relief of Pain in Midwifery

SIR,—Dr. C. A. Allan (Jan. 24, p. 175) states that it is surprising that so little attention is given to the problem of analgesia in labour. The true position is that the perfect analgesic for labour has yet to be discovered and that the objections to many of the available analgesic agents are so great that many doctors avoid their use not from callous indifference but from a distrust and appreciation of the dangers of such methods as prolonged narcosis with the barbiturates or the opium alkaloids, and from the experience that the use of Minnitt's apparatus and other methods of gas-air analgesia have been unsatisfactory.

In my experience the objections to the barbiturates have been principally in their effect upon the foetus. If an adequate relief of pain is obtained for the mother the foetus is frequently slow to respond at birth, and I am sure that every now and again a foetal death results from the use of the barbiturates alone.

The uses of morphine-hyoscine narcosis and similar methods may give rise in a considerable proportion of women to uncontrollable excitement which may cause extreme difficulty in delivery, and particularly in the management of a patient in her home.

Minnitt's apparatus, in an investigation in which I took part in 1934, gave satisfactory analgesia in 94% of cases, the criterion of satisfaction being the joint opinion of the obstetrician-in-charge and the patient. There is no doubt that when used by a patient who has been familiarized with its use, as advocated by Dr. Anne M. Toms (March 6, p. 475), it is a very valuable method indeed, but in various parts of the country I have found a regrettable ignorance of the proper use of the apparatus on the part not only of the patient but, as Dr. Allan points out, of the doctor or nurse. The substitution of pure nitrous oxide inhalation for the gas and air of the Minnitt apparatus, as advocated by Dr. H. Thistlethwaite (Feb. 14, p. 318) and Dr. R. John Gourlay (Feb. 28, p. 417), carries with it a danger of foetal anoxia, as in the case quoted by the latter writer. In many cases a very short period of anoxia may

be sufficient to determine a fatal outcome for a foetus, possibly already suffering from the strain of prolonged and difficult labour, and for this reason it seems to me that the safety factor of the air inlets in the Minnitt apparatus is of prime importance.

In the United States and to a less extent in this country the recent interest in continuous caudal and saddle-block spinal anaesthesia, and in other local anaesthetic methods, has been followed by enthusiastic reports from various authors, and one of the most recent of these (Hingson *et al., J. Amer. med. Ass.*, 1948, **136**, 221) claims to have demonstrated a considerably lower mortality rate where these methods have been used than in cases treated by systemic narcosis or general anaesthetics. They point out that the stillbirths and neonatal deaths were four times as great in cases where no anaesthetic was used as in those where local and regional anaesthetics were applied. This is probably an even more cogent argument for the use of analgesics than the dictates of common humanity, but it is impracticable to undertake these particular methods in any but large, well-equipped, and fully staffed hospital units owing to the prolonged and continuous supervision required.

The use of pethidine described by Miss Josephine Barnes (April 5, 1947, p. 437) gave relief in 87% of patients. It is a method simple to apply and safe for both mother and foetus, and in my experience leads in a considerable proportion of patients to strikingly easy labour. 100 mg. of pethidine should be given as soon as pains are well established, and repeated in three hours if necessary and if delivery does not appear imminent. This gives ample analgesia in the majority of cases, but in a few women it appears to be inadequate and in these the addition of morphine gr. 1/4 (16 mg.) by hypodermic injection will usually prove satisfactory.

One is forced to the conclusion that, as has been so often stressed before, the ideal analgesic method for labour has yet to be discovered, but in general practice the use of pethidine or morphine, with an inhalation anaesthetic for delivery such as "trilene," or even the much maligned choloroform in small dosage, is still probably the most satisfactory practicable method.—I am, etc.,

Inverness. J. A. CHALMERS.

Leucocytosis following Treatment with Thiouracil

SIR,—The toxicity of thiouracil has been much discussed in the past few years in English and American literature. There were some cases with agranulocytosis, but leucopenia was described as the usual reaction. In the case reported below—treated with methylthiouracil—a significant leucocytosis was observed with marked increase of lymphocytes.

Female, aged 37. Diagnosis—Graves-Basedow disease, cardiomyopathia compens. Basal metabolism rate +32%. White blood cell count 8,000.

The treatment was started with minimal dose. The total dose of 4 gr. (0.25 g.) was reached only on the 13th day. On that day the white cells—previously constant at 8,000 per c.mm. even on the 10th day of the treatment—were 15,000 in number. 1.25 gr. (81 mg.) was added during the following two days. The white cell count was still high, 16,500. Then treatment was stopped. Two days later the white cell count was 9,000 and this remained unchanged the following 6 days.

The differential count at the leucocytic state: neutrophil metamyelocytes, 2%; band forms, 4%; polymorphs, 36% (5,600 in absolute count); eosinophils, 12% (1,850); lymphocytes, 40.5% (6,200); prolymphocytes, 4%; Gumprecht's shadows, 1%; monocytes, 0.5%. Two days after treatment was stopped: neutrophil metamyelocytes, 0%; band forms, 2%; polymorphs, 59%; eosinophils, 7%; lymphocytes, 30%; monocytes, 2%. Five days after this: neutrophil metamyelocytes, 1%; band forms, 4%; polymorphs, 57%; eosinophils, 4%; lymphocytes, 32%; monocytes, 2%.

The bone marrow at the time of the above deviation was unchanged. Lymphoid cells were not increased. Subfebrility, tachycardia, and basal metabolism rate remained unchanged. The response to treatment was nil.

—I am, etc.,

Szeged, Hungary. E. KELEMEN.

Trichlorethylene in General Anaesthesia

SIR,—As Dr. Ronald Millar (March 13, p. 524) has rightly pointed out, the use of trichlorethylene in anaesthesia is still in its trial stage, and it behoves anaesthetists to report their experiences with the drug so that the full range of its useful and harmful properties may become known.

Dr. Millar reports several interesting observations regarding trichlorethylene which concur with my own experiences of the anaesthetic. I cannot agree with him, however, that a percentage of oxygen as low as 20 should be used with trichlorethylene. Owing to the diminished depth of respiration, I have found that CO_2 "build-up" and anoxia will occur unless a good flow of gases (at least 6 litres a minute) and 30% to 40% oxygen are given, especially in longer cases. I cannot help feeling that the increased muscular tone observed by Dr. Millar is at least partly due to hypoxia.

Dr. Millar's case of jerky abdominal movement under trichlorethylene is very interesting, as I had a similar case not long ago. The condition commenced during a period of strong surgical stimulation; a change over to ether did not completely abolish the abnormality, but within a matter of ten minutes the condition improved, and by the end of the operation respiration was normal.

I have had one case of "false anaesthesia" resembling that described under chloroform.[1] The patient, a healthy woman of 39 years, was to undergo Keller's operation. Six ml. of 5% thiopentone was given, followed by gas-oxygen-trilene with a well-fitting mask. A tourniquet was applied, and ten minutes later, when the surgeon was ready to start, respirations were regular, the limbs were relaxed, and the eyelash and eyelid reflexes were absent. The surgeon's knife showed that the patient was not indeed anaesthetized, but fortunately the deepened respirations ensuing rapidly brought on true anaesthesia.

Unlike Dr. G. Ostlere (Jan. 31, p. 195) I have had no complaints that trichlorethylene increases bleeding. On the contrary one or two surgeons have expressly asked for it because of the diminished capillary oozing. This accords with Dr. Langton Hewer's view.[2]

Finally I should like to say that I have found trichlorethylene very useful for ensuring a smooth transition from gas–oxygen to ether (preparing the larynx, as it were, for the stronger stimulus to come), and for most cases where anaesthesia deeper than stage 3, plane 1, is not required—provided always that adequate oxygen is given, that the warning signs of tachypnoea and cardiac arrhythmia are acted upon, and that the minimum only of the drug is used.—I am, etc.,

MARK SWERDLOW.

REFERENCES

[1] Minnitt, R. J., and Gillies, J., *Textbook of Anaesthetics*, 1944, p. 220, Edinburgh.
[2] *Recent Advances in Anaesthesia*, 1944, p. 103, London.

SIR,—I should like to express my appreciation of the criticism afforded my paper on trichlorethylene. There are three points in this recent correspondence upon which I beg leave to comment.

1. Safety. No fatality definitely incriminating trichlorethylene was described by any correspondent.

2. Oxygenation. We have found that in appropriate cases a mixture of 20% oxygen and 80% nitrous oxide is suitable for maintenance. Small amounts of trichlorethylene may be added to this mixture as necessary. It was finally considered that increasing the oxygen percentage when trichlorethylene was employed, which was the usual practice at Hill End Hospital between 1940 and 1944, did not decrease the tendency of the drug to produce tachypnoea. I must apologize for not making clear that adequate oxygenation of the patient is essential as with the employment of any anaesthetic agent, and that we administer up to 50% oxygen with trichlorethylene if the tidal air is markedly decreased by the action of curare. If the tidal air remains at or above normal volume an increase of the inhaled oxygen from 20 to 100% only slightly raises the oxygen content of the arterial blood.

3. Intubation. We perform nearly all our nasal intubations under trichlorethylene, a few breaths of which, following induction with thiopentone, have always appeared to establish sufficiently deep anaesthesia to prevent the appearance of vasovagal reflexes. Breath-holding and coughing may occur, although the patients rapidly settle down. The danger of the *respiratory* disturbances following intubation in light anaesthesia has been noted by Gillespie (*Endotracheal Anaesthesia*, 1948, p. 145. Wisconsin): "If the function of the patient's heart or lungs is seriously handicapped by disease, even a slight lack of oxygen, such as can be caused by holding the breath, may be sufficient to cause death." This may be the explanation of some deaths attributed to "reflex factors" and emphasizes the care that should be taken for the full oxygenation of such cases, but hardly condemns trichlorethylene out of hand as an unsuitable agent for intubation. However, I do not wish to become involved in a discussion on intubation in light anaesthesia.—I am, etc.,

Hill End, St. Albans. GORDON OSTLERE.

Natural Position in Childbirth

SIR,—I was much interested in Dr. Kathleen Vaughan's letter (Jan. 31, p. 222). I have seen women in Persia deliver themselves in the squatting position, walking to the doorway of their hut to do so. Placenta followed baby almost immediately, and there were never any perineal tears. The babies, however, were always small, averaging 5½ lb. (2.5 kg.), and with much smaller heads than most English ones.

In practice I have found the best position for the woman is on her back, with plenty of pillows under her shoulders, and the knees well-flexed—in fact the nearest thing to squatting. The women tell me they can use their pains much better than in the lateral position, and indeed it seems natural that it should be so. If one happens to be single-handed it is easier to control the patient, and for doctor and mother to co-operate. I believe this is the French practice.

As regards perineal tears and stretching of the perineum (which can result in much more lasting damage than a simple tear), I am inclined to think that episiotomy is the answer.

I would like to add that I am the mother of four children, my eldest being born when I was 32. I was never delivered in the "natural" position, but I practised squatting frequently during the last month of pregnancy and during labour. My babies were always born quickly and easily.—I am, etc.,

Kendal, Westmorland. FRANCES M. TAYLOR.

Health of Students

SIR,—May I comment on some of Dr. John Pemberton's conclusions (March 13, p. 490)? He states that "some 20% (of students) were found to be suffering from minor anxiety states and depression." He gives as an example of this that they were afraid of failing their examinations, with all that that entails nowadays. Surely, Sir, this is a normal and very temporary state to be in, or does Dr. Pemberton consider it abnormal to be afraid of ploughing an examination? His other example of anxiety state is that 9% had insomnia (whether permanent or just before examinations is not stated). He uses as a standard an inability to fall asleep after being in bed for one hour. Is this really meant as a scientific standard? I suggest that Dr. Pemberton talks to a junior probationer nurse, who will tell him about patients who "never sleep a wink" yet manage to snore all night.

In the section on orthopaedic defects he claims an incidence of 34%, with 14% having flat foot. I wonder if Dr. Pemberton realizes that there is a difference between a flat foot and a foot which looks flat but which stands up to playing tennis, Saturday night dances at the Union, Sunday hikes, and other strenuous activities. Those of us with considerable experience of having cases referred to us after routine inspections of school-children and Service men know that this is a common error.

There is claimed to be a 16% incidence of postural defects of the spine, that is "scoliosis, kyphosis, and lordosis" (*sic*). Even if I were prepared to believe that such a high incidence of abnormalities was present, I must disagree with his conclusions. He states, "Most of the orthopaedic abnormalities found were due to lack of muscle tone and physical development, and could perhaps have been prevented by better previous physical education. They emphasize again the value of adequate and easily available facilities for athletics, sports, and gymnastics as a positive contribution to student health." Later he further states, "The frequency of postural and other orthopaedic defects raises the question of the value of compulsory physical education such as has been introduced for freshmen in at least one British university." Has Dr. Pemberton the slightest evidence to support these conclusions? Does he think that gymnasts never suffer from flat foot or postural scoliosis? Has he any proof that exercises have ever prevented or cured these conditions? I am, of course, quite aware that this is a very common but nevertheless erroneous belief, and that in your leading article you state, "Yet even a young person with severe kyphosis and unfit for most sports may overcome his handicap by learning to swim on his back." If a kyphosis is amenable to treatment it is by developing secondary curves above and below the lesion, and surely a breast and not a back stroke would best do this.

Social medicine has been claimed as "a new scientific approach to medicine." Where are Dr. Pemberton's controls? Has he examined a similar group of non-students to find out how many of them had postural defects or had ever lain awake at night? Did he discover the relative incidence of postural defects in those students who do and those who do not play games? Is there a significant difference between those who had compulsory physical exercises and games at school and those who did not?

Many medical men have wondered what the exact function of social medicine is. I hope it is not to produce field surveys without any controls.—I am, etc.,

Sheffield. SIDNEY PAPPWORTH.

Intervertebral Disk Lesions

SIR,—Dr. J. Donaldson Craig and Mr. A. W. Lipmann-Kessel's letter (March 20, p. 570) on this subject is most illuminating. Andrew Taylor Still and, subsequently, the osteopaths have for sixty years suggested that sciatica and many other referred neuralgic pains are "due to joint disturbances." Evidence is gradually accumulating to prove there is more truth and value in the osteopathic theory than has so far been admitted by the orthodox medical profession.

While from the patient's point of view it is probably unimportant where and by whom knowledge is developed, it is only fair, in my opinion, that medical writers should give credit to the author of any theory they propound or elaborate.—I am, etc.,

London, W.1. GEORGE MACDONALD.

Diagnosis of Relapsing Fever

SIR,—With reference to the interesting paper of Drs. R. I. Bodman and I. S. Stewart (Feb. 14, p. 291) the following notes on diagnostic difficulties in sporadic cases of relapsing fever might be of some interest.

Sporadic cases of comparatively rare diseases often present diagnostic difficulties. Four cases of relapsing fever were observed here in the period from May, 1946, to November, 1947. Three ran a typical course, and *Spironema recurrentis* could easily be found in the blood smears of two, whilst all responded well to neoarsphenamine. The fourth case caused considerable anxiety and was first considered an acute abdominal condition, then typhoid, until his temperature chart and prompt response to a single injection of 0.45 g. of neoarsphenamine disclosed the true nature of his grave condition.

The case history was as follows. A farmer aged 40 was taken ill with high temperature on May 5, 1946. Next day he was admitted to a surgical ward with colicky pain in the right hypogastric region. W.B.C., 15,000; B.S.R., 20–40 mm. He was given sulphadiazine orally (28 g.) and his temperature returned to normal. On May 13, seven days after his admission, he was discharged at his own request, only to be readmitted on May 25. Once more his temperature was around 38° C. (100.4° F.), which did not subside after another course of sulphadiazine (30 g.) and 180,000 units of sodium penicillin. His spleen was enlarged, and he was transferred to the fever department. The Widal was negative, and, as his temperature chart took on a recurrent character with attacks of fever alternating with temperature-free intervals, relapsing fever was suspected. By now, nearly 5 weeks from his first attack, his general condition had become very critical, and without microscopical confirmation 0.45 g. neoarsphenamine was injected. He responded promptly, and his temperature dropped to normal within 24 hours, after which his general condition improved steadily. He was in perfect health when last seen in September, 1947, more than a year after his illness.

—I am, etc.,

Kosice, Czechoslovakia. I. FRIEDMANN.

Appendicular Dysfunction

SIR,—Chronic appendicitis or appendicular dysfunction is a difficult condition to diagnose with any degree of certainty. The physical signs are minimal or even absent, excepting perhaps during an exacerbation.

The surgeon has therefore to make a diagnosis from the history and exclusion by investigation of other types of right-sided pain. It was with interest, therefore, that I elicited a physical sign during the examination of a case of abdominal pain and indigestion which pointed quite definitely to the appendix being the cause of a patient's symptoms. The patient

had been referred to me with a diagnosis of a duodenal ulcer, and on pressure over the appendix the pain was referred to the umbilical region and reproduced the pain of which he was complaining. This clinical finding could be repeated at will.

The mechanism of the sign was apparent at operation, as the appendix contained a large faecolith, distal to which there was a collection of mucus. Pressure on the appendix therefore probably increased intra-appendicular pressure and produced the referred pain already described. It would seem most unlikely that this observation has not already been described in the voluminous literature regarding appendicular dysfunction. It is, however, not described in Hamilton Bailey's *Demonstration of Physical Signs in Clinical Surgery*, which is a very comprehensive treatise on this subject.

McBurney's sign is used extensively in the diagnosis of appendicular dysfunction, but the sign described above requires more generalized pressure in the right iliac fossa, and it should be possible to obtain it in any case where the appendix contains fluid in its lumen associated with partial obstruction and complete obstruction. This is a dangerous type of appendicular dysfunction, as perforation and peritonitis are likely to occur should acute infection supervene.—I am, etc.,

Newcastle-upon-Tyne. F. DENIS HINDMARSH.

The Lazy Eye

SIR,—During the four months that have elapsed since my letter to you concerning defective vision in recruits (Nov. 15, 1947, p. 796) some forty to fifty boys have been referred every fortnight to the ophthalmic centre which I attend because their vision in one eye is 6/12 or less. In the intervals of refracting them I have read with keen interest the letters that have appeared in your correspondence columns on the school ophthalmic service and the lazy eye.

As a Devonian I was pleased to learn from Dr. Margaret L. Foxwell's letter (Jan. 31, p. 228) that the Devon County Council made all their school-children read the letters on the chart. I was equally delighted to read in Dr. Francis J. Lorriman's letter (March 6, p. 476) that Kent County Council had "a plan." I sensed Mr. S. Black's frustration (Jan. 10, p. 77) at the non-fulfilment of the various recommendations of the committees. I was appropriately horrified at Dr. Mark Bradford's statement (March 6, p. 476) that the health visitor had to do the "eye testing" because the doctor was driven too hard by time and bureaucracy's relentless pressure. I shuddered at the thought of the school medical officers having to do a yearly refraction of every school-child at Mr. Black's behest (Feb. 21, p. 368).

I wondered about the type of "refractive error" which afflicted 70% of Dr. John Pemberton's Sheffield students and which only required 37% of them to wear glasses. But I became really angry when I read that *one-third* of the 150 students had either the wrong spectacles or else none at all (March 13, p. 490). So I went and dug out some figures on the eye defects of recruits. Apparently when they were trying to estimate the number of men who would be wearing spectacles if such were to be permitted on active service in the Boer War, the answer was 5%. During the 1914–18 war some 4% of the men in the average division were said to need glasses. The Americans rejected 8% of their "Draft" for visual defect, and calculated that 4% needed to wear spectacles. In the recent war the Americans estimated that 6% of their enlisted men had vision in the one eye of 6/18 and below. Some sample analyses of National Service recruits in the United Kingdom during the winter 1946–7 showed that 8% had vision of 6/18 in the one eye and below. Approximately 5% of the whole entry needed spectacles.

Therefore it would seem that though a considerable amount of hard work and good will has gone into the treatment of the ophthalmic conditions of the school-child, the end-results cannot in any way be held to be satisfactory. The hard core of the problem remains for solution—that 10% of the children need a thorough examination by an ophthalmologist, and that 5% will need to wear spectacles.

I trust, Sir, that you will regard this letter as fair comment. Admittedly I do not advance any constructive policy; I hope, however, that the scheme that is receiving consideration by the Council of the Faculty of Ophthalmologists will provide a successful solution.—I am, etc.,

London, S.W.1. G. C. DANSEY-BROWNING.

The Department of Medical Photography

SIR,—In his unusual article entitled "Where are we going?" Dr. Ff. Roberts (March 13, p. 485) devotes half a column to clinical, or better termed medical, photographic departments. His comments in this connexion rest beneath the curious subtitle "The Fetish of Perpetual Expansion," and it seems unfortunate that of the many examples which could be marshalled to illustrate this section Dr. Roberts has chosen one which lends but little support to many of his arguments.

As one of the authors quoted without context, I would submit that subsequent remarks concerning Pasteur, Thomson, and Hopkins are both facetious and irrelevant. The very extent of quotation in this complete reference seems indicative of a lack of first-hand experience and hence detracts from any conviction apparent in other passages.

By the very nature of their work medical photographic departments are further divorced from the general run of hospital practice than are many of the other special departments: in many instances they are to be found in the medical schools and not in hospitals. It seems only fair to point out that these departments do not exist primarily to ease the burden of the clinician, to conserve manpower, or to show an economic return in the strict sense of the term: the accent is, or should be, placed far more on the record and educational aspects.

As the above comments are not offered in any sense of justification for the existence of medical photographic departments, no further elaboration should be necessary. It would be interesting to know, however, if Dr. Roberts would condescend to use lantern slides and material for publications prepared to meet his own requirements, or if he would prefer to perpetuate cracked and faded slides, and further blur the impression of half-tone blocks monotonously copied from book to book?—I am, etc.,

London, S.W.1. PETER HANSELL.

Alcoholics Anonymous

SIR,—You have no doubt heard before this of our organization, which, though American in origin, has in the past year commenced activities in Great Britain. We have already had some measure of success and are now enrolling new members every week.

A brief description of our aims and objects appeared in the *Lancet* last year, and from time to time the daily, Sunday, and weekly Press have had articles about us. We are most anxious, however, to have the approval of the medical profession as a whole, as we consider that without any doubt the best approach to an alcoholic patient is through his or her own doctor.

In recent weeks we have had contacts with many doctors, and not only have we had no adverse word of criticism from them, but several have written to us or telephoned to us in terms of the warmest commendation. In particular they appreciate our help in rehabilitation of the patient after medical treatment. Needless to say we have no patent medicine, nor do we offer any form of medical treatment, though it often falls to our lot on meeting a new patient who asks for our help to recommend that he obtains treatment from his or her own doctor. We claim that our most valuable work lies in showing to the alcoholic who wishes to recover, through our own personal example, that it really is possible to achieve total abstinence and at the same time find an entirely new and completely happy way of living.

Above all we like it to be very plainly understood that we are not a reform society, and we have no interest in alcoholic patients unless they have a genuine desire to stop drinking. We expect them to approach us, or at any rate to express to someone else a desire to hear more of our methods.

I should be most grateful if you would allow me space for this letter, and in particular if you would state that we would welcome enquiries to our monomark address, simply "BM/AAL, London, W.C.1." For your own information, I enclose my name and address as a guarantee of good faith, and regret that our rules compel me to sign this letter,

ALCOHOLICS ANONYMOUS.

POINTS FROM LETTERS

Make Act a Success

Dr. G. POLLOCK (London, S.W.18) writes: After plodding through the letters (March 6) on the National Health Service I came to the name Aleck Bourne (p. 465) before I had read his letter. With most of the letters that I had just been reading in my mind, I had a feeling that I was going to be disappointed by seeing such a writer marching forwards (or is it backwards ?), the victim of the psychology of the crowd. My mind, however, was soon set at rest when I found him calling attention to the doubtful value of the answers to Question A, and I agree "that scarcely a single doctor—perhaps not even Mr. Bevan himself—could have answered 'Yes' without mental reservations." Confusion of the issue could not have been more successfully brought about by the phrase in its present form, even if someone had set out with the deliberate purpose of causing confusion by a choice of words. . . . Mr. Aleck Bourne says that this is not a time "for battle-cries and the metaphors of war." The words of Lord Palmerston as quoted in *States and Morals* by Prof. D. Weldon aptly apply: "Half the wrong conclusions at which mankind arrive are reached by the abuse of metaphors, and by mistaking general resemblance or imaginary similarity for real identity." Not only the metaphors of war have been used, for I see the use has been extended into the ethical or moral sphere. I don't think it was quite the meaning intended in the New Testament language, "what shall it profit a man if he gain the whole world and lose his own soul," that it can rightly be applied as a censure to a doctor who expresses his intention to help to work the National Health Insurance scheme. I remember well the controversy and emotional upsets of the time of the introduction of the panel system, and I am resolved to do my best to make this Act a success. I believe that the doctors of the future will be quite able to secure any necessary improvements in their conditions as the need for these becomes apparent. . . .

Only a Beginning

Major J. STARTIN, R.A.M.C.(ret.), writes: With reference to the leading article "Only a Beginning" (March 6, p. 454), I think the profession should ask themselves the questions (1) Is this the beginning of further opposition to the Act ? or (2) Is it a suggestion that a more open view should be taken, as regards the Act as a whole, with the health of the nation at stake ? I hope the answer to (1) is No and the answer to (2) is Yes. . . . During 20 years' service in the Army I never had any interference with my clinical work. We worked as a team with the team spirit. We had a large proportion of highly qualified men as specialists, and I think we may say that such men as Sir Ronald Ross, Sir William Leishman, and Sir Leonard Rogers made no small contribution to the advancement of medicine and the health of the universe. These men were bred in the Government service of medicine, in which I was proud to serve. I appeal to you gentlemen, in the words of John Hunter, "Don't think, try it!" Is the profession to remain *in statu quo* or is it to strive after higher ideals ?

Good Policy

Dr. H. T. N. MERRICK (London, S.W.5) writes: In *Ulster Commentary*, February, 1948, published by the North of Ireland Government, the North of Ireland Minister of Health in a recent speech said: "The health scheme is being left in the hands of those who are accustomed to the work. The Government's part is to provide the means to enable them to get on with their job." This is a good policy for the B.M.A.

Simple Certificates

Dr. P. S. D. GOWERS (Sheffield) writes: However the National Health Service is organized, may we ask for simplicity in certification forms ? I would suggest that the name and address spaces on prescriptions and all certificates in common use be identical in size and spacing, facilitating the use of carbon copies.

Severe Reaction to Penicillin

Surgeon Commander J. C. GENT (Dartmouth) writes: With reference to correspondence on the subject of severe reaction to penicillin the following case may be of interest. On Feb. 20 an officer aged 35 reported complaining of a sore throat and swelling in his neck. His temperature was 101° F. (38.3° C.). There was tonsillitis with an acutely inflamed left tonsil which had become ulcerated at its upper pole. The glands in the angle of the jaw on the left side were enlarged and tender; the skin over them was red and tense. He was given gargles, local kaolin poultices to the neck, and sulphathiazole internally. His condition improved rapidly, but he continued to run an evening temperature up to about 100° F. (37.8° C.), and on Feb. 25 penicillin therapy was started. 30,000 units of the sodium salt were given intramuscularly at 1 p.m. At 3.30 p.m. he had a rigor, and another 30,000 units of penicillin were given at 5 p.m. Soon after this he noticed a rash beginning to appear on the flexor surfaces of his forearms.

When I saw him at 6 p.m. his temperature was 102° F. (38.9° C.), and there was a morbilliform rash involving the flexor surfaces of his forearms and his trunk, front and back. The rash had avoided the face, and there were no Koplik spots. He complained that his throat was more painful, and the glandular swelling in his neck had increased in size. No more penicillin was given. He slept well; his morning temperature was normal and the rash had completely disappeared. Thereafter his recovery was uneventful and he remained afebrile save for a slight evening rise of temperature to 99° F. (37.2° C.) on Feb. 27. He was discharged to his ship on March 1.

To my mind the point of interest is that the rash was morbilliform in character, as I have not previously seen any mention of this type of rash following penicillin. It is arguable, of course, that it was in reality due to the sulphathiazole, but I think this is unlikely as he had had 21 g. without any signs of intolerance and the rash disappeared as soon as the penicillin was stopped, though sulphathiazole was continued. Moreover there were the constitutional symptoms—rigor, etc.—which made their appearance within an hour-and-a-half of the first injection. Another point is that his temperature, which had been rising to 100° F. or thereabouts at night before penicillin, settled afterwards in spite of the severe reaction. Could the rash in reality have been a toxic manifestation due to the sudden release of toxins resulting from the destruction of a large number of organisms ? I should be interested to know if any similar cases have been experienced.

Dr. KENNETH MACKINNON (Isle of Tiree, Argyll) writes: I was much interested in the cases of severe reaction to penicillin reported by Dr. D. Heffernan (Feb. 7, p. 277), Dr. J. F. L. Walley (Jan. 24, p. 150), and Dr. William Corner (Feb. 28, p. 417), and so perhaps my own personal experience of a severe reaction after treatment by penicillin for two-sided acute lobar pneumonia on two occasions within the last twelve months may be of some interest to others.

In the years 1946–7 I suffered from three attacks of two-sided lobar pneumonia within the space of eighteen months and at intervals of six months. The first attack was treated successfully with sulphapyridine, and there was no reaction of any kind.

The second attack failed to respond to sulphonamide treatment, and 3-hourly injections of penicillin were resorted to. After five days of 3-hourly injections of penicillin the temperature dropped and the injections were stopped, but unfortunately there was a relapse and the 3-hourly injections of penicillin had to be continued for a further period of five days, when the temperature again dropped and the chest condition gradually cleared up. On getting out of bed and attempting to dress I had great difficulty in getting my coat on, on account of pain and stiffness in the left shoulder-joint, and all movements of the joint became difficult and were greatly restricted. The pain and stiffness increased and I was compelled to go to hospital to have the shoulder-joint manipulated under an anaesthetic, and this was followed by physiotherapy for three weeks.

The left elbow-joint was also painful and stiff, but not too troublesome, and I had recovered the use of my left arm to a large extent, when I developed the third attack of two-sided lobar pneumonia, which was also treated with fairly large doses of penicillin by injection, and very successfully treated. No sooner had the chest condition cleared up than there was a return of the joint pains and stiffness—this time in the right shoulder-joint and also in the left elbow-joint. After three weeks of massage and radiant heat treatment the shoulder-joint gradually improved, but the left elbow-joint still gives a lot of trouble at times.

At the time I was of the opinion that the pain and stiffness of the joints was a reaction to the penicillin, and now after reading the letters I have already mentioned I am more convinced than ever that this is the case. There was no reaction whatsoever after the attack which was treated with sulphapyridine.

Relief of Pain in Midwifery

Dr. MARTIN JENNER (Woking, Surrey) writes: I cannot agree with Dr. Anne Toms (March 6, p. 475) when she says that the pains of perineal stretching in labour "in most cases call for anaesthesia." Having worked in close association with Dr. Dick Read for some time I have seen many cases conducted both by doctors and midwives according to his ideas. Of those women interested and instructed in their task of childbirth it is unusual to meet one who will use the "trilene" inhaler or Minnitt's machine during the second stage of labour, although these are freely offered to all of them.

At the start of perineal stretching most women are a little apprehensive, but near "crowning" the perineum is insensitive, and should it rupture the actual tearing is never felt. The delivery of a case instructed in this way gives the mother more joy than pain, while the purely obstetrical advantages of delivery with the full co-operation of the mother and trouble-free third stage have to be seen to be believed. . . .

Obituary

W. R. REYNELL, M.A., D.M., F.R.C.P.

We announce with regret the death on March 21, at the age of 63, of Dr. Walter Rupert Reynell, who until two years ago was senior physician to the West End Hospital for Nervous Diseases.

Dr. Reynell was born in South Australia and educated at Queen's School and St. Peter's College, Adelaide. In 1906 he came to Balliol College, Oxford, as a Rhodes scholar, and there he distinguished himself as a boxer and at tennis. He was a student at Guy's Hospital and graduated in 1913, a year after he had taken the conjoint diploma. He was a house-surgeon, out-patients officer, and house-physician at Guy's Hospital until July, 1914. He served with the R.A.M.C. in the 1914–18 war and was with the Australian Voluntary Hospital in Belgium for some time and at the Seale-Hayne Hospital for neurological cases at Newton Abbot.

Dr. Reynell took the M.R.C.P. in 1918, and was elected assistant physician to the West End Hospital for Nervous Diseases in 1920 and physician in 1926. Most of his active work was done at this hospital, and he soon became more interested in the psychopathological problems of diseases and disorders of the nervous system than in the purely organic side of neurology. He was always a sound neurological diagnostician, but he devoted an increasing amount of his time and energy to psychotherapy. His interest in this work was well shown in some of the papers he published in the 1930's on morbid depression and anxiety and similar subjects. In 1934 he was elected F.R.C.P. Then early in 1940 he was again commissioned in the R.A.M.C., and with the rank of major he joined the Hospital for Head Injuries at Oxford. There he continued to work throughout the war, concerning himself mainly with the psychiatric aspects of head injuries. He returned to London at the end of the war, but retired from the West End Hospital in 1946.

Dr. C. Worster-Drought writes: W. R. Reynell was my valued hospital colleague for more than twenty-five years; very early in this period I became aware of his reliability, loyalty, and integrity, the realization of which increased as the years passed by. Always of somewhat retiring disposition, at times almost self-effacing, he disliked teaching in the form of set lectures or demonstrations and was not altogether keen on hospital committee work. Nevertheless he could always be relied on to respond to any suggestion that his help in a course of demonstrations would be appreciated, or that his presence at a particular committee would be of value. In such circumstances the opinions he expressed were invariably sound and of great assistance. On many occasions of difficulty with regard to hospital matters I have been deeply conscious of his loyal co-operation. One could always discuss any such problem with Reynell and be sure of sympathetic understanding and sound advice.

In earlier days he was attracted by the more organic aspects of neurology, but gradually became more and more interested in the psychopathological problems of nervous disease, and particularly in psychosomatic disorders. In the out-patient department Reynell was at his best, and there is no doubt that he was happier in the purely clinical side of his work than in any other. Reynell, a great sportsman, will be sadly missed by patients and colleagues alike.

Dr. W. Ritchie Russell writes: Throughout the late war Dr. Reynell was a much valued member of the staff of the Military Hospital for Head Injuries, Oxford. His wide experience of practical psychiatry in civilian life and of battle neurosis during the first world war made him a specially useful addition to the neurological staff. He took great interest in devising psychometric tests for detecting loss of mental capacity after head injury, and the large number of reports he made are carefully preserved for reference; these are still of great value in the treatment and care of those many soldiers and airmen who when convalescent from brain wounds were studied by Dr. Reynell. He was a natural physician and never failed to take extra time and trouble if by so doing he could help his patients or colleagues. He had the highest ideals and his conscientious devotion to duty never faltered. We who worked with him came to admire his philosophy and to enjoy his friendship. His death brings a feeling of personal loss and deep regret that we shall not again meet to take part in the stimulating discussions we remember so well. One cannot think of Rupert Reynell without picturing him at home with his wife and family, of whom he was rightly so proud, and we can only send them our deepest sympathy.

JOHN ROWAN, M.B., F.R.F.P.S.

The pupils of Edward Nettleship spread throughout the world of ophthalmology for many years at the end of the nineteenth century. One of the most loyal was John Rowan, who died suddenly on March 17 at his home near Prestwick, where he retired about ten years ago. He was born in Greenock, and all his life he was influenced by the traditions of the West of Scotland and the Firth of Clyde. He graduated M.B., C.M. in the University of Glasgow in 1889, and was subsequently senior house-surgeon at the Greenock Royal Infirmary. At an early age he was attracted towards the study of ophthalmology as a specialty, and he worked in London, Dublin, Göttingen, Paris and Berlin. At the old Moorfields, in Moorgate, he worked as a clinical assistant with Nettleship, and this led to a life-long association. To the last, Rowan was deeply interested in a family affected with retinitis pigmentosa and cataract, whose forebears from Devonshire had been traced out by Nettleship, and some of whose descendants were resident in the Glasgow area.

After his training period he returned to the Glasgow Royal Infirmary, and was ultimately appointed surgeon to the Ophthalmic Institution. He carried out his clinical work with patience and integrity. His passing will be a loss to many correspondents in all parts of the world. He had a gift for prolonged friendship, and was at his best when entertaining his chosen companions on the grouse moor or on the golf course. He admired and loved the out-of-door life, and brought to these interests the intensity of study characteristic of the townsman.

Dr. Rowan was elected a Fellow of the Royal Faculty of Physicians and Surgeons in 1900, and represented his colleagues on various boards of management until the end. At the annual meeting of the British Medical Association in 1922 he was vice-president of the Section of Ophthalmology. He contributed several carefully thought out papers to the literature of his chosen specialty, and he was considered to be a first-class clinical observer. Although he retired from active practice over ten years ago, he retained an active interest in the developments in ophthalmology in Glasgow. In later years he was rarely seen at medical society meetings; nevertheless, we have suffered a great loss in the passing of a man who could claim as his personal friends colleagues of the calibre of Nettleship, Treacher Collins, and Critchett.—W. J. B. R.

Medical Notes in Parliament

National Health Service Act

Mr. BOSSOM on March 18 inquired whether Mr. Bevan was yet satisfied that he would be able to provide the medical services proposed in the Health Service Act.

Mr. BEVAN replied that he certainly saw no reason why the Service should not start in the manner always contemplated.

Disclosure of Service Records

Dr. MORGAN, during the discussion of the Air Estimates on Report on March 15, raised the subject of the disclosure from R.A.F. records of medical information on personnel who have left the Air Force. He said that sometimes Service departments, including the Royal Air Force, gave information to other Government Departments which were opposing claims and the men might thereby be prevented from obtaining employment, yet trade unions which asked for such information confidentially and were willing to pledge themselves never to abuse the disclosure of the medical record of any man were refused such information. In one Government Department the grant of such information had been conceded 25 years

ago and had since then worked admirably in the interchange of medical information between medical officers of the Department and of the trade union concerned. He asked the Royal Air Force to find a way by which such information could be given to the man to enable him to get justice in any future claim in which he might be involved. The Government might answer that if it disclosed this information to one person it would have to disclose it to insurance companies and other concerns for purposes which a Government Department might not consider legitimate. But a Department could impose restrictions on the disclosure of confidential information which would ensure that such disclosure was not abused while at the same time giving the man the opportunity of dealing on equal terms with the Service department. Dr. Morgan added that he did not demand an immediate answer to the point he had raised.

University Votes

When the House of Commons went into Committee on March 16 Mr. PEAKE challenged a proposal to abolish the university vote. He recalled that the Speaker's Conference had recommended the maintenance of university representation and methods of election. Mr. Peake contended that the case for the abolition of university seats was now weaker than it ever had been because university education was open to all who had talent, and in future 90% at least of graduates would be drawn from the ranks of the elementary schools. There was nothing undemocratic in giving extra representation to the best-educated section of the people. He asserted that the general election had not caused any part of the recommendations made by the Speaker's Conference to lapse.

Mr. PICKTHORN said that if the rule of "who pays the piper calls the tune" was to be exercised excessively by the Government in regard to the universities the effect was bound to be intellectually and scientifically bad. It was more than ever important that universities should have two channels of communication in Whitehall and Westminster. If the University Grants Committee became the only channel of communication the danger to academic independence would be overwhelming. The Government proposal was a blow at the learned professions.

Mr. HERBERT MORRISON denied that there had been any breach of undertaking by the Government. He agreed that a high proportion of university graduates now came from the elementary schools on scholarships, but to argue that this ought to give the House a bias in favour of this form of plural voting and of the separate representation of the universities was very wrong. The Government took the course which it did because it sincerely believed that it was inappropriate to have a Parliamentary representation which was not in accord with properly conceived democracy.

Mr. R. A. BUTLER, speaking for the Conservative Party, said that when that party was returned to power university representation would remain a feature of the House.

Mr. EDE said this was the last fancy franchise which remained and the Government believed it was high time that it was wiped out.

On a division the proposal to abolish the university seats was approved by 323 to 203.

Silicosis

Mr. GAITSKELL announced on March 22 that the number of new cases of silicosis in miners was 5,821 in 1945, 4,426 in 1946, and 3,800 (provisional) in 1947. The main precautions were (*a*) the suppression of all forms of dust in the mines, (*b*) medical and *x*-ray examinations of mineworkers on entry and periodically thereafter, (*c*) after-care of the men affected, including medical attention, and (*d*) their placing in suitable alternative employment with pre-employment training where necessary. These matters covered the responsibilities of many Government Departments, and progress in the formulation of comprehensive arrangements was being stimulated and co-ordinated by the National Joint Pneumoconiosis Committee. Four subcommittees were engaged on these main features of the problem each with a chairman from the Department mainly responsible. The National Coal Board and the National Union of Mineworkers were also represented. Dust prevention measures, already highly developed in South Wales, were being improved and extended in each coal division through Dust Prevention Committees on which the Inspectors of Mines, the National Coal Board, and the National Union of Mineworkers were represented. A medical rehabilitation centre was also being provided by the Miners' Welfare Commission.

Previously, on March 18, Mr. Gaitskell said that although increased mechanization might produce increased quantities of airborne dust, in the present state of medical knowledge it was not possible to say whether the quantity or the quality of the dust was the most important factor in producing the disease. This was one of the main aspects of the problem on which the Pneumoconiosis Research Unit was engaged. In these circumstances the National Coal Board were adopting measures to suppress as far as possible all forms of dust in the mines. These measures included wet cutting, water infusion, and spraying. Mr. Gaitskell added that far more work of this kind was done in South Wales than anywhere else.

Atomic Warfare and Civil Defence

Sir JOHN ANDERSON on March 22 opened the discussion on the organization of civil defence. He referred to shelter policy and said account ought to be taken of the possible effects of atomic bombs. The consequences of the explosion of an atomic bomb were first the blast, secondly the risk of what was called flash burn, which was burning by the radiation of heat, thirdly radiation, and lastly the problem of contamination. Except at a very short distance from the centre of an atomic bomb explosion the blast wave presented the characteristics of the wave following an ordinary explosion. It might be more violent but was not different in kind. There seemed no reason why a system of surface shelters should be rejected because of the atomic bomb. Flash burns caused many casualties at Hiroshima and Nagasaki, but the flimsiest protection—even a sheet of brown paper—sufficed to prevent injury. But to protect against radiation considerable thicknesses of resisting material which need not be of solid structure would have to be interposed between the explosion and the people to be protected. For protection against radiation research would be required to determine the best kind of material for covering shelters. Simple investigation would show whether several feet of sandbags would suffice. It would not be easy to decide when it would be safe for persons who had suffered no injury to emerge from a shelter. The first need would be to ensure an ample supply of simple detectors, which he believed could be provided cheaply and for use by shelter wardens.

While radioactive material might be widely dispersed after an explosion a great deal of the activity would die away after a matter of hours or probably in less than a matter of days. If the occupants of shelters could be provided with suitable footgear and gloves it would be safe for them to traverse a considerable area which was still contaminated. If the explosion had taken place high above the ground all the radioactive material might be carried into the upper atmosphere, but if the explosion was on the ground or beneath the surface radioactive material might be widely dispersed and extremely difficult if not impossible to remove. An authoritative decision on shelter policy based on adequate knowledge should be made beforehand, and he suggested that a statement on policy should not be long delayed.

Major VERNON said that the Bikini experiments showed that an atomic bomb exploding under water produced about a million tons of radioactive water in the form of rain, spray, and mist. Ships over which that radioactive cloud had passed were still radioactive after eighteen months.

Cmdr. NOBLE said it had been discovered that the effect of the atomic bomb was limited. It would therefore be sensible to have hospitals, factories, and power stations dispersed so that if an atomic bomb fell only one of them would be affected. He asked for a comprehensive plan for dispersal throughout the country.

Squad.-Ldr. KINGHORN said the House should realize that bacteriological warfare could take place and that the defence was in the Commonwealth. Something could be done now to give some kind of Empire and Colonial dispersal.

Government Reply

Mr. YOUNGER, replying for the Home Office, said that if the Government perfected and put into skeleton form a complete system of civil defence it would profoundly affect all peacetime commercial, economic, and social activities. They had to strike a balance between being caught entirely unprepared and developing a large defence system too soon. In war there was an immense advantage for the side which went into production last. They must have basic research and a clear idea of the problem before they put any great and costly machinery into operation. There had been an intensive analysis of the bombing in Germany and of the atomic bombing in Japan. Deep shelters in various parts of the country seemed to provide good protection against atomic warfare. He knew of a number which were maintained in reasonable condition. Research into shelter protection continued. He detailed the arrangements made for the organization and planning of civil defence. The Emergency Medical Service and other organizations would have to be included. The Emergency Medical Service would be based largely upon the National Health Service with the co-operation in certain respects of the local authorities. In peacetime all local services would be recruited and administered locally. Training schemes would be devised centrally

under Sir John Hodsell. He assured the House that the Government and its advisers were fully alive to the problems raised in the debate but some unknown factors still defied assessment and he must ask for further patience. The Government had not underestimated the importance of proper preparation in this sphere of defence.

Voluntary Hospitals Outside the Act

Mr. BEVAN issued on March 25 the following list of voluntary hospitals in the London area which had been disclaimed from the provisions of the National Health Act: the French Hospital and Dispensary; the Italian Hospital; the British Dental Hospital; King Edward VII Hospital for Officers; Royal Masonic Hospital; Star and Garter Home, Richmond; Scio House Hospital for Officers, Putney; Hurlingham Lodge Auxiliary Hospital; Hawthorne Christian Science House, Hampstead; Stanborough's Hydro, Watford; St. Andrew's Hospital, Dollis Hill; Hospital of St. John and St. Elizabeth; St. Vincent's Orthopaedic Hospital, Pinner; St. Saviour's Hospital; St. Joseph's Institute, N.9; St. Joseph's, E.8; St. Anthony's Hospital, Cheam; St. Veronica's, S.W.14; St. Michael's, Worcester Park; Hostel of St. Luke, W.1; St. Raphael's, Brentford; St. Raphael's Colony, Potters Bar; Pield Heath House; St. Teresa's, Wimbledon; Hostel of God, Clapham Common; Home of Compassion, Thames Ditton; Convent of Our Lady Nursing Home, Hillington Court; St. David's Home, Ealing; Etloe House, E.10; London Clinic for Psycho-analysis; Catholic Nursing Institute; Manor House.

The Minister and the B.M.A.

Mr. BEVAN told Sir THOMAS MOORE on March 25 that he had taken note of the decision of the British Medical Association on March 17 not to enter the new Health Service on July 5 unless substantial changes were made in the Act. Asked what further steps he proposed to take in the matter Mr. Bevan referred Sir Thomas to a reply given to Mr. Lipson on Feb. 19. This reply was reported in the *Journal* of Feb. 28 (p. 420).

When asked by Mr. BOSSOM on March 25 what steps he proposed to bring into operation the new Health Service without the co-operation of the medical profession, Mr. BEVAN replied, "I cannot accept the assumption underlying the Question."

N.H.S. Building Priorities

Sir ERNEST GRAHAM-LITTLE asked Mr. Bevan on March 25 to indicate the priorities which could be given in providing the buildings necessary for fulfilment of the National Health Service Act, 1946, including health centres and hospitals. Mr. BEVAN'S answer was that only the most urgent needs could be met at the moment, but when conditions permitted provision would be made for the development of all services under the Act.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

NATIONAL HEALTH SERVICE ACT

At a meeting of the Royal College of Physicians of Edinburgh held on March 15 the following resolutions were adopted and it was determined that they should be communicated to the Prime Minister and to the Press:

Since its incorporation by Royal Charter in 1681, the Royal College of Physicians of Edinburgh has endeavoured to fulfil the purposes for which it was founded, namely, to consolidate the medical profession and to improve its standard of knowledge; to advance medical learning and science; and to promote by all means in its power the good health of the nation.

The Royal College of Physicians of Edinburgh shares the desire of the entire community for a National Health Service which will afford to the people the highest standard of medical service attainable. It views with disappointment and disquiet the failure of the negotiating parties to reach agreement.

The College is of opinion that the overwhelming vote of every section of the medical profession disapproving of the National Health Service Act, 1946, in its present form can only be explained by the fear that professional freedom is gravely endangered. The essential fear centres round the power of the Minister to alter by order or regulation the fundamental terms of service of the medical profession.

The College urges in the national interest that negotiations should be resumed and that the matters in dispute be re-examined and adjusted so that the profession will feel able to co-operate with confidence in the development of the comprehensive service desired by all.

Medical News

Course for Midwife-Teachers

The Royal College of Midwives will hold a four-months course starting on Aug. 4 for the training of midwife-teachers. The Ministry of Health is offering 15 scholarships of £65 each. Applications for scholarships must be returned before April 17. Further information may be obtained from: The Central Midwives Board, 73, Great Peter Street, London, S.W.1; or The Royal College of Midwives, 57, Lower Belgrave Street, London, S.W.1; or The Ministry of Health, Whitehall, London, S.W.1.

Edinburgh Refresher Course

A fortnight's refresher course at Edinburgh University begins on Monday, May 3, at 9 a.m. It is intended primarily for demobilized medical officers (Class II) and for insurance practitioners. Fee for graduates not claiming expenses from Government sources, 10 gns.

Trade Union Pressure

According to the *Daily Express* (March 22) the Surrey Federation of Trades Councils has empowered its executive to ask Surrey doctors if they intend to work in the new Health Service—"Then the federation plans to advise trade unionists to transfer to the panels of doctors who will work the scheme."

Recruitment and Training of Nurses

The "Ten" group has submitted to the Minister of Health its comments on the Working Party's Report on the Recruitment and Training of Nurses. The group consists of 10 State-registered nurses; they are anonymous. In order to define the duties of nurses the group believes that it is primarily necessary to analyse the needs of patients, for, as it points out, in recent years these have changed, and the patient has often come to be in the care of many individuals in contrast to the one or two in former times. These include doctors, nurses, medical auxiliaries, and domestic staff. The group suggests that the services of existing assistant nurses should be retained, but that the Roll of Assistant Nurses should be closed at a given date. It believes that the candidates to the nursing profession should be grounded in basic sciences before being admitted to hospital training, and it agrees with the Working Party that student status is a necessary prerequisite to professional status.

Welsh Tuberculosis Services

The Minister of Health and other officers of the Ministry received to-day representatives of the Welsh Regional Hospital Board (Sir Frederick J. Alban, Prof. R. M. F. Picken, Alderman the Rev. Digwel Thomas, Mr. Thomas MacDonald, Mr. W. J. Canton, Mr. H. T. Edwards, Alderman Tom Evans, and the Assistant Administrative Medical Officer and Secretary) on March 17 to discuss the proposal of the Regional Board to set up a separate hospital management committee to administer the tuberculosis service in Wales and Monmouth. The Minister considered that the proposal of the Regional Board did not entirely conform with the intentions of the Act, and made certain alternative suggestions with a view to entrusting the day-to-day management of the tuberculosis institutions to the respective local management committees while continuing certain central functions under the aegis of the Regional Hospital Board.

Wills

Sir John Fraser, who was Principal of Edinburgh University, left £60,960. Dr. Walter King Hunter, formerly professor of medicine in Glasgow University, left £73,973; Dr. Wilfrid Hugh Roberts, of Buckfastleigh, £14,392; Dr. Joseph Foreman Berry, of Wigan, £12,995; and Dr. Elizabeth Hamilton Brook, formerly assistant county medical officer in Lancashire, £20,924.

COMING EVENTS

International Congress on Mental Health

We are asked to remind those who wish to attend the International Congress on Mental Health, which is to be held in London from Aug. 11 to 21, that applications can only be accepted after April 15 in exceptional cases and provided space permits. It is appreciated that the high total cost of attending the congress may deter some people from applying; a reduction of fees will be considered in such cases if a letter to that effect is forwarded with the form to the Congress Organizer, 19, Manchester Street, London, W.1.

Gastro-enterology

A postgraduate course in gastro-enterology will be held on June 14–18 at the Tenon Hospital, 4, Rue de la Chine, Paris, 20. Those interested should write to Dr. Viguié at that address.

Institute of Hospital Administrators

The annual conference of the Institute of Hospital Administrators will be held at Caxton Hall, London, S.W., on Friday and Saturday, April 9 and 10. On April 9, at 2.15 p.m., the conference will be opened by Sir Hugh Lett, Bt., C.B.E., F.R.C.S., honorary secretary, King Edward's Hospital Fund for London. At 2.30 p.m. a paper on "Hospital Administration in the National Health Service" will be read by Mr. F. Messer, M.P., chairman, North-West Metropolitan Regional Hospital Board, and the subsequent discussion will be opened by Mr. George Watts, secretary, Oxford Regional Hospital Board, and Mr. F. J. Ingram, clerk and steward, Mapperley Hospital, Nottingham. On April 10, at 10 a.m., papers will be read on: "The Hospital Administrator's Conditions of Service": (1) "Superannuation under the National Health Service" by Mr. A. E. Hickinbotham, assistant secretary, Ministry of Health, and (2) "The National Health Service Whitley Machinery" by Mr. S. W. Mayne, assistant secretary, Ministry of Health. Discussions on the two subjects will be opened by Mr. G. Hurford, house-governor, Queen Elizabeth Hospital, Birmingham, and Mr. John Griffith, house-governor, Canadian Red Cross Memorial Hospital, Taplow, Bucks, respectively. At 2.30 p.m. a paper on "The Training and Qualification of the Hospital Administrator" will be read by Mr. C. G. Rolliston, president, the Institute of Hospital Administrators, and the discussion will be opened by Mr. F. A. Lyon, administrator, the Seamen's Hospital Society, Greenwich, and chairman, Examinations Committee of the Institute of Hospital Administrators.

On April 9, at 7.30 p.m. for 8 p.m., at the Savoy Hotel, London, there will be a reception and buffet supper (tickets, £1 1s. each, excluding wine).

Tuberculosis Association

A meeting of the Tuberculosis Association will be held at Brompton Hospital, London, S.W., on Saturday, April 10, at 10 a.m., when there will be demonstrations by Dr. Clegg, pathology of tuberculosis bronchitis, and Miss Reed, physiotherapy in chest disease. Medical and surgical clinical demonstrations and radiological demonstrations will follow. At 2 p.m. communications will be submitted by Dr. A. M. C. MacPherson, on "Late Follow-up of a Group of Children with Primary Tuberculous Lesions"; by Dr. F. H. Young, on "The Successive Use of Artificial Pneumothorax, Phrenic Interruption and Pneumoperitoneum"; and by Dr. A. T. M. Roberts, on "The Late Results of Extrapleural Pneumothorax."

Maudsley Hospital Medical School

Dr. J. G. Greenfield, F.R.C.P., will deliver a special lecture on "The Pathology of Encephalitis" at the Institute of Psychiatry of the British Postgraduate Medical Federation at Maudsley Hospital Medical School, Denmark Hill, London, S.E., on Friday, April 16, at 2 p.m. The lecture is open, without charge, to postgraduate medical students and others interested.

Medical Library Association

The 50th anniversary of the founding of the Medical Library Association, as well as its annual meeting, will be held in Philadelphia on May 28–30. Further information may be obtained from the Secretary, Academy of Medicine, 288, Bloor Street West, Toronto 5, Ontario, Canada.

Legal, Social and Industrial Medicine Congress

The twenty-fourth Congress of Legal, Social and Industrial Medicine will be held at Lausanne, Switzerland, from May 21 to 23, under the presidency of Prof. Reinbold. The secretary-general, Prof. Muller, 14, Avenue Friedland, Lille, France, will give all necessary information to those interested.

SOCIETIES AND LECTURES

Sunday

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At London Jewish Hospital, Stepney Green, E., April 4, 3 p.m. "*The Workshop of a Novelist's Brain*," by Mr. Louis Golding.

Monday

WESTMINSTER HOSPITAL SCHOOL OF MEDICINE: MEYERSTEIN LECTURE THEATRE, Horseferry Road, S.W.—April 5, 5.30 p.m. Clinico-pathological demonstration. Discussion: "*Hypertension*."

Wednesday

MEDICAL SOCIETY OF THE L.C.C. SERVICE.—At St. Charles' Hospital, St. Charles' Square, Ladbroke Grove, London, W., April 7. Clinical meeting.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—April 7, 3.30 p.m. "*Problems of Adolescent Behaviour*," by Dr. Doris Odlum.

Thursday

FACULTY OF HOMOEOPATHY.—At the London Homoeopathic Hospital, Great Ormond Street, London, W.C., April 8, 5 p.m. "*The Treatment of Certain Heart Conditions by Homoeopathy*," by Dr. D. M. Borland.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury Square, London, W.C.—April 8, 7.30 p.m. "*Varicose Veins*," by Mr. R. Rowden Foote.

Friday

BIOCHEMICAL SOCIETY.—At University College, Dublin, April 9, 1.30 p.m. 266th Meeting. Papers will be read.

Saturday

ROYAL SANITARY INSTITUTE.—At King Alfred Baths, Hove, April 10, 10.30 a.m. "*The Sterilization of Sea-water Baths with Special Reference to the Ozone Treatment*." Paper by Dr. N. E. Chadwick.

APPOINTMENTS

William Henry Newton, M.Sc., M.D., D.Sc., has been appointed professor of physiology in the University of Edinburgh.

Prof. Newton was born in 1904 and was educated at Manchester University. He graduated with first-class honours in physiology in 1925, and held the Platt Scholarship in physiology in Prof. Raper's department. He qualified M.B., Ch.B. in 1929 and proceeded M.D. in 1934. From 1930 to 1934 he worked under Prof. Lovatt Evans and took the London D.Sc. in 1940. From 1939 to 1944 he was acting head of the physiology department at University College, which he left to take the George Holt Chair of Physiology at Liverpool University. He has published a number of papers on the physiology of pregnancy, and is on the editorial board of the *Journal of Physiology*.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Brownlee.—On March 9, 1948, at 9, Grosvenor Street, Edinburgh, to Margot, wife of T. J. Brownlee, F.R.C.S.Ed., a son.

Wright.—On March 19, 1948, at Liverpool Maternity Hospital, to Sheila Wright, M.B., Ch.B. (*née* Richardson), wife of Dr. Frank B. Wright, a daughter.

DEATHS

Bromley.—On Jan. 24, 1948, as the result of a fall, Francis Edward Bromley L.M.S.S.A., of 24, Orchard Street, Canterbury, aged 80.

Burditt.—On March 15, 1948, at Penarrow, Mylor Bridge, Falmouth, Cornwall, Ralph Austin Burditt, M.R.C.S., L.R.C.P.

Magee.—On March 11, 1948, Katie, wife of Dr. H. E. Magee, 19, York Mansions, London, S.W. R.I.P.

Megaw.—On March 17, 1948, at Lee Park Lodge, Blackheath, S.E., William Megaw, M.B., B.Ch., B.A.O., aged 64.

Meller.—On March 16, 1948, at Mill House, Felixstowe, Robert William Meller, M.R.C.S., L.R.C.P., D.P.H.

Moore.—On March 16, 1948, at South Lodge, Henbury, Bristol, Clifford Arthur Moore, M.S., F.R.C.S.

Muirhead.—On March 18, 1948, at Nod's Folly, Mill Lane, Earley, Berks, Islay Burns Muirhead, M.D., aged 94.

Norman.—On March 13, 1948, at 8, Alleyn Road, West Dulwich, Hubert James Norman, M.B., Ch.B.Ed., D.P.H., Medical Superintendent of Camberwell House, aged 67.

Potts.—On March 13, 1948, at Bower Cottage, Maidstone, George Potts, F.R.C.S., late Major R.A.M.C., T.A., aged 71.

Rowan.—On March 17, 1948, at Whitehaugh, Monkton, Ayrshire, John Rowan M.B., C.M.Glas., F.R.F.P.S.Glas.

Smith.—On March 12, 1948, at a Glasgow Hospital, Angus Dalrymple Smith, F.R.C.S.Ed., of 3, Millgate, Richmond, Yorks, aged 47.

Todd-White.—On March 14, 1948, at Broomhills, Broomhill Road, Woodford Green, Arthur Thomas Todd-White, M.R.C.S., L.R.C.P., aged 78.

Williams.—On March 8, 1948, David Owen Williams, M.B., Ch.B., of Cletwr Hall, Glandyfi, Cards, aged 77.

EPIDEMIOLOGICAL NOTES

Anti-cholera Vaccination Requirements

An Order which came into force in Italian Somaliland on Oct. 25, 1947, directs that: (1) every person entering the territory of Somalia from Egypt, India, or Pakistan, other than a person in transit by air, shall be in possession of a certificate signed by a recognized medical practitioner stating that he has received a second inoculation against cholera not more than six months and not less than six days prior to the date of entry; (2) every person in transit by air through the territory of Somalia from Egypt, India, or Pakistan when not in possession of a valid certificate shall be subject to medical examination and will be allowed to proceed unless upon such examination he is suspected to be suffering from cholera.

Notification of Measles and Whooping-cough

A fee of 2s. 6d. instead of 1s. will now be paid for notifying the medical officer of health of a case of measles or whooping-cough met with in private practice. Though the compulsory notification of these diseases was regarded as likely to be temporary when it was introduced during the war, the Minister of Health considers that it should be retained, and he has therefore made the notification fee conform to the statutory rate.

Discussion of Table

In *England and Wales* an increase occurred in the incidence of whooping-cough 351, acute pneumonia 139, and dysentery 29, while a decrease was recorded for measles 339, scarlet fever 42, and diphtheria 27.

The notifications of whooping-cough over the past three weeks have been at the highest level since 1941. During the week under review the largest rises were those of Warwickshire 85 and Surrey 71. No large fluctuations occurred in the local returns of acute pneumonia, but a small increase was recorded in most areas.

After rising for seven consecutive weeks a fall was reported in the number of notifications of measles; the largest decreases were those of Northamptonshire 94, Gloucestershire 91, and Lincolnshire 91. Only small variations occurred in the local returns of scarlet fever; the largest was an increase of 40 in Wiltshire. The only feature of note in the returns of diphtheria was a decrease of 17 in Lancashire.

Two new outbreaks of dysentery were notified during the week, one involving 43 persons in Berkshire, Abingdon M.B., and the other 29 persons in Glamorganshire, Cardiff C.B. The other large returns of dysentery were Yorkshire West Riding 37 (Sheffield C.B. 23, Brighouse M.B. 10); Lancashire 28; and London 23.

The only areas with more than one notification of acute poliomyelitis were London 4 (St. Pancras 2); Wiltshire 2; Middlesex 2; and Warwickshire 3 (Birmingham C.B. 3).

In *Scotland* a fall in the number of notifications was recorded for measles 161, scarlet fever 28, cerebrospinal fever 12, and diphtheria 10, while a rise occurred in the incidence of acute primary pneumonia 43 and dysentery 35. The largest returns of dysentery were in the cities of Edinburgh 18, Glasgow 14, Paisley 14, and Aberdeen 10. The rise in the incidence of pneumonia was contributed by the western area.

In *Eire* an increase occurred in the incidence of diarrhoea and enteritis 16 and pneumonia 16, while a decreased incidence was reported for whooping-cough 22. Three-quarters of the cases of diarrhoea and enteritis were notified in Dublin C.B. Whooping-cough was slightly less prevalent in all areas except Dublin C.B., where a rise of 9 occurred.

In *Northern Ireland* a decrease of 14 was recorded in the notifications of scarlet fever.

Quarterly Return for Scotland

During the December quarter the birth rate was 19·5 per 1,000, being 2.6 below the rate for the corresponding quarter of 1946 but 1.3 above the average of the five fourth quarters of 1942–6. The infant mortality was 57 per 1,000 registered live births—1 more than that for the December quarter of 1946 but 6 less than the five years' average. The maternal mortality was 1.4 per 1,000 total births and was the lowest rate recorded for any quarter. The general death date was 12.3 per 1,000, and was 0.4 below the average of the five preceding fourth quarters. The death rate from all forms of tuberculosis was 77 per 100,000 and that from respiratory tuberculosis was 67. The former was 2 lower than that for the fourth quarter of 1946, and the latter was the same as in that quarter, but they were respectively 6 and 9 above the five years' average. The largest number of deaths from epidemic diseases were 29 from influenza, 21 from cerebrospinal fever, 16 from measles, 10 from whooping-cough, and 9 from diphtheria.

The provisional return for the whole of 1947 shows that the birth rate of 22.0 per 1,000 was the highest recorded since 1923. The infant mortality was 56 per 1,000 live births; this rate was 2 above that for 1946, and with this exception it was the lowest rate ever recorded in Scotland. Maternal mortality was 2.0 per 1,000 total births and was the lowest rate ever recorded. The general death rate was 12.9 per 1,000 and was 0.3 above the average of the five preceding years. The death rate from all forms of tuberculosis was 80 per 100,000, and for respiratory tuberculosis the rate was 66. These rates were 3 and 7 respectively above the average of the five preceding years. Deaths from epidemic diseases included 345 from influenza, 223 from whooping-cough, 130 from acute poliomyelitis and polio-encephalitis, 88 from cerebrospinal fever, 57 from measles. Only 44 deaths were attributed to diphtheria, the smallest number ever recorded in Scotland. In 1940 deaths from diphtheria numbered 676. Deaths from diarrhoea and enteritis at ages under 1 year numbered 1,123.

Week Ending March 20

The notifications of infectious diseases for England and Wales during the week included: scarlet fever 1,847, whooping-cough 3,304, diphtheria 173, measles 10,034, acute pneumonia 963, cerebrospinal fever 49, acute poliomyelitis 20, dysentery 170, paratyphoid 2, and typhoid 6.

No. 11

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 13.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948 (a)	1948 (b)	1948 (c)	1948 (d)	1948 (e)	1947 (Corresponding Week) (a)	1947 (Corresponding Week) (b)	1947 (Corresponding Week) (c)	1947 (Corresponding Week) (d)	1947 (Corresponding Week) (e)
Cerebrospinal fever	55	5	25	1	1	107	9	34	7	2
Deaths		—	—				—	7		
Diphtheria	173	19	50	13	8	184	9	54	16	3
Deaths	2	1	—	—	—	3	1	—	—	—
Dysentery	213	23	72	2	—	73	7	16	—	—
Deaths				1	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	1	1	—	1	—
Deaths		—					—			
Erysipelas			40	4	3			35	5	3
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				36					31	
Deaths	50	6	11	2	2	97	9	15	11	1
Measles*	8,449	1257	614	78	39	11,269	499	227	26	104
Deaths†			2	1	1	19	—	—	—	2
Ophthalmia neonatorum	42	3	13	—	—	78	9	28	—	—
Deaths										
Paratyphoid fever	3	—	1 (B)	—	—	5	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	933	49	4	6	8	1,076	81	18	21	7
Deaths (from influenza)‡	31	8	—	—	—	80	10	10	3	2
Pneumonia, primary			320	38				295	48	
Deaths	293	71		6	8		102			20
Polio-encephalitis, acute	—	—				—	—			
Deaths							1			
Poliomyelitis, acute	20	4	2	4	—	5	1	—	3	—
Deaths§	1	—					—			
Puerperal fever		2	10		—		—	15		1
Deaths										
Puerperal pyrexia‖	120	9	7	—	—	148	7	9	—	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,027	123	319	50	46	1,336	114	215	19	40
Deaths†			—	—	—	2	—	—	—	—
Smallpox	—	—	—	—	—	2	1	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	1	—	3	1	6	—	1	—	—
Deaths	—	—	—	—	1	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	3,418	236	49	41	15	2,407	252	384	193	17
Deaths	15	2	2	—	—	22	1	9	9	3
Deaths (0–1 year)	380	55	61	23	12	630	80	85	76	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,581	988	680	205	140	7,456	1276	915		194
Annual death rate (per 1,000 persons living)			13·7	12·8				19·0	25·6	
Live births	8,738	1491	986	463	215	10,166	1586	1164		315
Annual rate per 1,000 persons living			19·9	29·0				23·4	29·2	
Stillbirths	240	23	36			317	40	38		
Rate per 1,000 total births (including stillborn)			35					32		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Pelvic Osteitis after Prostatectomy

Q.—*What is the pathology of the pelvic "osteitis" which occasionally follows prostatectomy? Does the inflammatory tide always stop at the ischial tuberosities? Is there any specific treatment other than penicillin in the febrile phase? What is the average period before, say, office work is (a) safe, and (b) comfortable? Are the radiological appearances distinctive?*

A.—Pelvic osteitis following prostatectomy appears to be a subacute infective process starting in the periosteum near the symphysis and spreading to involve the symphysis and a variable length of the pubic and ischial rami. The infecting organism is not known with certainty. It is probable that *Bact. coli* is the most frequent offender; *B. proteus* and staphylococcal infections have also been reported. The area of osteitis is almost invariably limited to the pubic and ischial rami, but very occasionally the process may extend further, and may even reach the acetabulum, when the hip-joint may, exceptionally, become involved. In a proportion of cases an abscess forms in the soft tissues and may discharge for a variable period. The diagnosis can be established by radiological examination, though changes will not usually be observed until the infection has existed for two months or so. The characteristic changes consist of rarefaction of the pubic bone and often of the ischial rami; the symphysis may be widened and often has a moth-eaten appearance. Later there is new bone formation subperiosteally, giving the appearance of short bony spurs. In the stage of healing the symphysis may become ankylosed by bone.

The disease is self-limiting, and full recovery of function is to be expected. Most forms of treatment have no effect on its course. This often applies even to penicillin, which in most cases has given disappointing results, probably because the organisms responsible are insensitive. If the pain and muscle spasms are severe the most satisfactory form of treatment consists in the application of a double plaster hip spica, which is retained for two to six months. Chemotherapy should of course also be tried, though its effects are uncertain. Apart from these measures the only active treatment that may be required is the drainage of local abscesses if they occur. The period before return to work can be advised is so variable that no general rule can be given. In some cases recovery is complete in two to three months; in others the symptoms persist for up to two years. A probable approximate average period of disability would be six months from the development of symptoms. It should be safe to resume sedentary work as soon as short walking distances can be covered without marked discomfort.

Inheritance of Cystinuria

Q.—*What type of inheritance is concerned in the hereditary abnormality in metabolism which causes cystinuria?*

A.—The inheritance of cystinuria is not very clearly established. One difficulty is that the metabolic anomaly may be present without the formation of calculi and so biochemical investigation is required for its recognition. Nor does it seem to be established whether there is a relation between the frank and very rare disease and the relatively common excretion of small amounts of cystine as found by some workers in otherwise normal people. There is, in fact, little to add to Garrod's account of 1923 (*Inborn Errors of Metabolism*, 2nd ed., Oxford University Press). It seems certain that in some families at least inheritance is dominant, for several instances of direct transmission through three generations have been proved. On the other hand it seems likely that in some families inheritance is recessive. There is a marked preponderance of males among affected persons. Thin's remarkable pedigree (Robson, *Biochem. J.*, 1929, **23**, 1938) includes two large sibships of first cousins, with three marriages between them. This pedigree has the unusual distinction of fitting either dominant inheritance or sex-linked inheritance (with a high rate of expression in heterozygous females), or, with rather less likelihood, recessive inheritance.

Cases for the Coroner

Q.—(*a*) *In many cases "the coroner has the power of holding a court without a jury if, in his discretion, it appears to be unnecessary. In charges of murder, manslaughter, infanticide, deaths of prisoners in prisons, inmates of asylums or inebriates' homes, or of infants in nursing homes, he must summon a jury." Is this a true and proper statement of the law in these cases as it applies to-day?*

(*b*) *What operative deaths should be reported to the coroner? At some hospitals all deaths that occur within twenty-four hours of an operation are reported, while elsewhere it is held that unless the death occurs "on the table" the coroner is not notified.*

A.—(*a*) In ancient times every inquest was held with a jury, but the Coroners (Amendment) Act, 1926, Section 13 (1) allows of the jury being dispensed with at the discretion of the coroner except in certain types of case. These exceptions include those mentioned in the question quoted above, and also cases of death due presumably to accident, poisoning, or disease of a kind notifiable to a Government Department—e.g., certain industrial diseases such as lead poisoning—or to a street accident, and of death occurring in circumstances which may be "prejudicial to the health or safety of the public or any section of the public." This last provision enables the coroner to direct attention forcibly to any state of things which constitutes a risk of further injury or death to persons exposed to such conditions.

(*b*) Under Section 75 of the Registration (Births, Still-births, Deaths, and Marriages) Regulations, 1927, it is the duty of the registrar to report to the coroner any case of a death occurring following an operation for dealing with the results of an injury, or any death occurring at operation or before the effects of the anaesthetic have passed off. A hospital may make a rule that any death occurring within twenty-four hours of operation should be reported to the secretary or house governor, or a coroner may express a desire that any such deaths should be notified to him, but such arrangements have no statutory basis. The important thing to remember, however, is that any death which appears to be unnatural or to suggest circumstances of special danger to health or life should be brought to the notice of the coroner, who should be given an opportunity of making such inquiries as he may think proper.

Intravenous Procaine Analgesia in Obstetrics

Q.—*What are the advantages, the dangers, the technique, and the indications for intravenous procaine analgesia in obstetrics?*

A.—Only a few comparatively small series of cases in which intravenous procaine has been used to relieve the pains of labour have been recorded, so the method is still in an experimental stage and it is not yet possible to assess its value, dangers, and limitations. The effect of procaine given intravenously is very short-lived, so it is necessary to give the drug by continuous infusion. In one technique 10 g. of procaine are dissolved in 1 litre of 5% glucose in water and the intravenous drip is begun as soon as "pains" become distressing, even if the cervix is only two to three fingers dilated. The rate of administration at this stage averages about 1 ml. a minute, but it has to be varied from time to time according to the reactions and sensations of the patient. When full unconsciousness is required as for the birth of the head, the application of forceps, or repair of episiotomy, the "drip" is allowed to run freely. The total dose naturally varies with the speed and duration of the infusion, but one patient is recorded as having had as much as 8 g. in six hours, and another had 9.5 g. in nine hours.

Intravenous procaine seems not to depress uterine contractions to any extent, and the patient recovers consciousness very quickly when its administration is discontinued. The degree of relief of pain depends on the rate of infusion, and it is claimed that the patient can co-operate well in the second stage even when there is considerable dulling of consciousness.

Amnesia is poor, however. Although early reports do not include cases in which either mother or child has shown significant ill effect, it is clear that the method is not without danger. When the dose is sufficient to give maximum relief the patient often has convulsions, but their incidence is reduced by preliminary medication with barbiturates, which is advised as part of the routine. It is also important to exclude a drug idiosyncrasy by skin and eye tests before beginning the intravenous drip. If the risks are to be reduced to a minimum it would seem necessary for a skilled observer to be in constant attendance during the several hours of treatment, ready always to stop the infusion and to administer antidotes (phenobarbitone and adrenaline). For further details reference might be made to papers by F. M. Allen (*Amer. J. Surg.*, 1945, **283**, 290; *Cur. Res. Anesth.*, 1946, **25**, 1) and by K. Johnson and C. R. A. Gilbert (*Cur. Res. Anesth.*, 1946, **25**, 133).

Curare and Smooth Muscle

Q.—*What is the effect of curare on smooth muscle, with special reference to uterine muscle?*

A.—The general view is that curare has no action on smooth muscle, but there is evidence that this requires modification. Cross and Cullen (*Anaesthesiology*, 1945, **6**, 231) found that "intocostrin" (1 mg. per kg.) caused peristalsis to cease for some time and brought about a loss of intestinal tone. These observations were made in unanaesthetized dogs with fistulae. Curare is believed to act on skeletal muscle by blocking the action of acetylcholine on the motor end-plate, and, since the intestine and other forms of smooth muscle such as the uterus also appear to contract by acetylcholine action, it is likely that they will be paralysed to some extent as well. Normally, smooth muscle is unaffected by doses which paralyse skeletal muscle, but it is reasonably certain that occasional subjects will be found in whom the smooth muscle is also affected. Whitacre and Fisher (*Anaesthesiology*, 1945, **6**, 124) describe the successful use of curare with cyclopropane anaesthesia in 100 operations for caesarean section. They make no mention of an effect on the uterus.

Profuse Sweating in Acute Rheumatism

Q.—*Can you suggest any treatment for profuse sweating in a case of acute rheumatism? A stout and flabby man aged 28 has had recurrent attacks of acute rheumatism lasting three months, with profuse bouts of sweating, tachycardia, and slight pyrexia. There is gross involvement of the endocardium of old standing. The pyrexia has settled and remained normal for over a month, and the heart rate at rest is 72, rising to 90 on effort, but the bouts of profuse sweating continue and cause anxiety.*

A.—It is difficult to suggest any line of treatment in this case, but rest in bed or on a couch on a sunny balcony or similar situation for a long period appears to be advisable. No evidence is supplied on the sedimentation rate, which would be a guide to the presence of any active infective process. Endocrine disturbance is possibly responsible, but any specific line of treatment for this is hardly possible, though small doses of thyroid might be useful. General light massage may be helpful, and ultra-violet irradiation given cautiously, and beginning with very small exposure, should be tried. Vitamin C is usually deficient in these rheumatic conditions, and should be supplied. It is not stated whether salicylates are still being given; they might account for excessive sweating and should be stopped.

Lacrimal Hypersecretion

Q.—*What is the best treatment for excessive secretion from the lacrimal gland as the result of exposure of the eye to cold or wind, especially when accompanied by high relative humidity? There is no sign of conjunctivitis or blockage of the nasal duct.*

A.—Treatment is unsatisfactory. The excessive watering is probably due to hyperactivity of the lacrimal gland induced by the stimuli mentioned. Protective glasses may help. Drops of zinc sulphate 0.25% may likewise be useful where watering is persistent.

NOTES AND COMMENTS

Skin Graft for Leg Ulcer.—Dr. D. REID TWEEDIE (Sungei Siput, N., Perak) writes: In the reply (Jan. 24, p. 183) to the question on this subject there is no mention of penicillin dressings. I have yet to find the tropical ulcer, even of many years' duration, which does not respond to penicillin lotion. The first dressings are strong, 20,000 units per ml., and the later ones weak, 5,000 units per ml. The base soon becomes pink and healthy and in a few weeks granulates to the surface; then a whitish epithelium grows in from the edge and the ulcer is healed.

Aseptic Inoculation Technique.—Dr. R. S. TAYLOR (Paris) writes: With reference to the question and answer under this heading (Feb. 28, p. 425), many years ago, perhaps thirty, I saw in the *Journal* a method of sterilizing syringe and needle at the bedside with primitive materials—viz., a teaspoon, some oil (olive for preference, butter if nothing else), a candle, a bread crumb.

Put the bread crumb in the oil in the teaspoon and hold over the candle till the bread crumb chars. The oil may then be sucked into the syringe as many times as necessary. I have not tried to make a culture from a syringe or needle treated in this way, but do not think that any germ, even one which apparently enjoys being boiled, would consent to function after being charred. The syringe may be cleared of oil with a little ether.

Cataract.—Dr. E. E. D. GRAY (Anerley, London, S.E.) writes: I was interested in the questions and answers about cataract (March 13, p. 531). I have had operations on both eyes for cataracts. One result is unsatisfactory but the other is excellent. I am not able to give an opinion on parts (*a*) and (*b*), but about part (*c*) I can speak from experience. I can see 6/9 and J1 and I do not suffer from eyestrain on reading. As a physician I have no difficulty in using an ophthalmoscope. I am therefore able to do my ordinary work.

Car driving by day is a simple matter. I can judge distance by the size of familiar objects. Driving by night is altogether different. The familiar objects are not visible and I cannot judge the distance in front of me of the tail-light of a car or lorry. The lights also dazzle me. However, in the depth of the night when there is no traffic and the street lights are extinguished I can use my headlights and driving is almost as easy as in daylight. However, I avoid night driving as far as possible.

Nocturnal Frequency in Elderly Men.—Dr. E. GALLOP (London, S.W.) writes: The influence of habit is not mentioned in the answer to this query (March 13, p. 532). In the absence of obvious prostatic enlargement, infection, or loss of elasticity in an ageing bladder wall it is a factor which should not be disregarded. The timing of micturition is an easily conditioned reflex, but a few broken nights will upset it and nocturnal frequency soon becomes established, and then the bladder has to be retrained. This means putting up with discomfort for a few nights, which many will not tolerate when relief is so easy. A dose of a bromide and belladonna mixture on retiring will help as a urinary sedative until the new habit is formed.

Polish Children's Hospital.—The Polish Red Cross Society has decided to build a large modern hospital for children on the heights of Rabka near the Tatra mountains. The deplorable ravages wrought by the war in Poland have particularly affected the children, and such is the poverty of the land that no public or private funds are available for this necessary work. The Polish Red Cross Society is therefore appealing for funds, which may consist of money or of goods such as bedding and clothes. Any donations will be used exclusively for constructing and equipping this hospital, and they will be gratefully received by Mrs. J. Gorska, Polish Red Cross Society, 35, Roland Gardens, London, S.W.7.

Correction.—The remarks attributed to Dr. Irene Yates in the report of a meeting of the Section of Psychiatry of the Royal Society of Medicine (March 20, p. 558) were made by Dr. Sybille L. Yates.

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